SOME NOTES OF A MEDICAL VISITOR TO THE BRITISH WEST INDIES

BY

A. V. NEALE, M.D., F.R.C.P.

Professor of Child Health, University of Bristol

To be invited by the Colonial Office to make a tour—as Medical Visitor to British Guiana and the British West Indies—at rather short notice drives one quickly to maps, geography and climatology, distances, air-routes and historical backgrounds, personal immunization procedures, and a rapid shaking of oneself into an appropriate mindedness which, at times (as events proved), made me feel that the Commonwealth was rotating round the significance of the particular place and persons with whom I was at the time located. This was rammed home (and incidentally indicated that this was to be no joy-ride) by the note that "at the end of his visit to each territory the Visitor will discuss his observations with the Director of Medical Services and with the Governor of the territory".

The terms of reference were delightfully—if a shade vaguely—stated:

"He should regard all the medical services in a Colony as his proper sphere of interest: he will be able to observe conditions under which medical officers work, exchange views on their problems and on recent advances in medicine; and encourage investigations of a kind that appear valuable and practicable. He will find opportunity for tactfully suggesting improvements in standards of practice—but from the outset the Visitor must bear in mind that he is in no sense an official inspector and this should be clear to those whom he visits: the Visitor will consider especially doctors working in comparative isolation and, in fact, he may prefer to spend much of his time with those working in outlying places. The first function calls primarily for the exercise of those qualities of understanding and friendliness that mark all good practitioners of medicine. The medical authorities in many colonies are deeply concerned about specific problems—including tuberculosis, child health, &c., and it is the policy of the Colonial Governments to develop preventive work to the utmost, and it is hoped that all participating will encourage interest and effective action in the various aspects of hygiene, social and preventive medicine."

Broadly, therefore, the explorations offered no limitation: it soon became evident that curative medicine had a limited significance when taken out of the overall needs of the community in a colony. The "State of the Public Health" (the significant title of our own ministerial Blue Books) soon demanded attention if any sort of perspective was to be reached. In my journeys I frequently reminded myself of Sir J. Simon's observations in his English Sanitary Institutions (1890, p. 298) on the inter relationships of the personal, environmental and social circumstances, and where, in these matters, Medicine stands, and where the Government.

"How far the described circumstances of our poorest labouring populations tend to better themselves, and how far they may be bettered by interference without, are questions which cannot be discussed without reference to parts of political economy on which I am incompetent to speak. Indirectly, indeed, these questions are of the vastest sanitary importance: for the 'public health' of a country means the health of its masses, and the masses will scarcely be healthy unless . . . they be at least moderately prosperous. And although the satisfactory solutions of these questions is a task for other sciences as well as the science of medicine . . . yet assuredly if that solution can be given the ultimate result will be among the foremost gains which a department of public health can have to record."

On 1st August—my day of departure—a heatwave was running in New York. My plane (the wonderful B.O.A.C. Monarch) was scheduled to leave London at 8 p.m

and land at New York at 6 a.m. The obvious thing was to fly in a tropical suit and be comfortable on arrival. So be it. But it wasn't quite so. Owing to "adverse winds" we came down at Iceland at midnight: so for one hour the personal heat regulating mechanisms were needed. However, with that concluded, and back into the warm plane, the interesting journey competed with the demands for sleep. At 20,000 ft., a clear sky and moon and starlight, and a clear downward view was fortunate. The masses of Southern Greenland and many enormous icebergs were seen—and after a little more sleep—we were over the wastes and lakes of North Eastern Canada, with an incredibly cold atmosphere outside and ominous snow cloud "air mountains" all around and below. But we were now moving southwards and (during an excellent B.O.A.C. breakfast) the St. Lawrence came into view and then Quebec. The last zone of Indian resistance was clearly outlined ("Three Rivers"); then Montreal and so down Albany to New York (two hours late) into the heatwave coming up at 8 a.m. The tropical suit was the right decision!

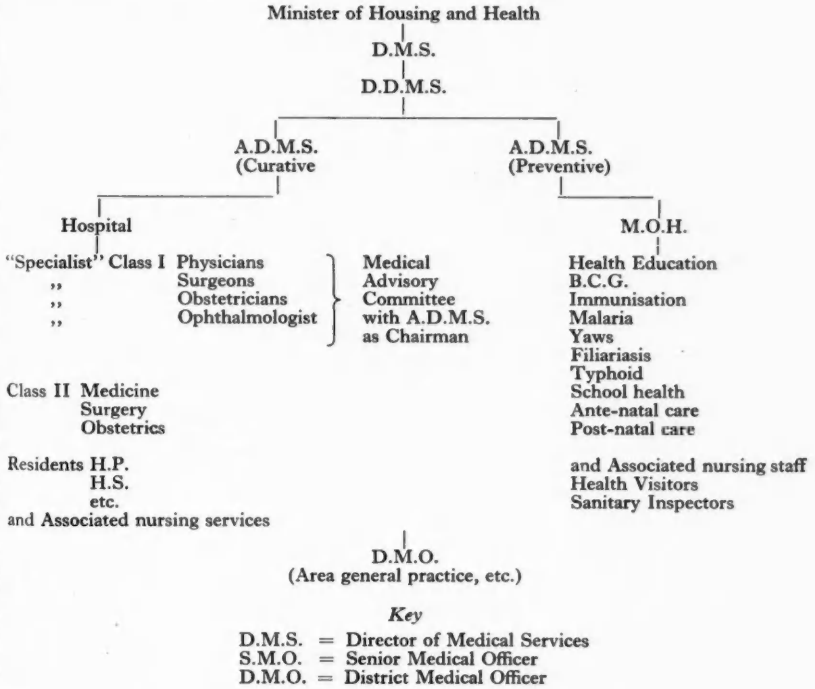
Then southward across the sea again for 1,500 miles to the island of Puerto Rico which at latitude 18 was like an oven, but it was pleasant to see real tropical vegetation all around and to cool off with iced coffee, whilst a short but cloud-splitting rainstorm worked itself out. By a series of plane hops across the whole of the Leewards and Windwards—including a thrilling series of alightings on land-strips with only yards to spare—Trinidad was reached in time to see some of the vast petroleum plant vividly illuminated from above. Some fatigue had come over me. My occipital lobes were now saturated with the panorama of aerial pictures—and I looked forward to a cold shower and an hour's rest in an air-conditioned room. However, it isn't so easy to find blessed isolation. On leaving the plane I was tapped on the shoulder by a doctor whom I had known in England 15 years ago (and who had read in the local paper that I was arriving!), and so I was quickly absorbed into the Port of Spain medical circle for a "convivial introduction" for which I was, through the actions of the day, quite unfitted. However, this welcoming event over, I prepared for the next flight next morning. So on to British Guiana at 7 a.m. The British Viscount planes are certainly worthy of the flag. Ease and confidence simply oozes within them. Morning coffee over Eastern Venezuela was a comfort until one fully comprehended that there was a run of 400 miles over the tropical forests, swamps and estuaries of the great Orinoco and other rivers and that they held only a great population of alligators. Looking west, however, there could be seen probably the wealthiest area in the world—towards the city of Caracas—where oil is gold and the only place I know in which the U.S.A. dollar is of no particular attraction. Our early pioneers missed it—for a reason unknown except perhaps they shied at the inland mountainous contour—and instead they battled with others to acquire the most morthern of the three Guianas which, although next door, unfortunately has lots of water but (up to now) no oil! The landing field at British Guiana is a fine one—a legacy of an American base in the war. Saturday, 12 noon (36 hours after leaving home) and I was in a new world. Heat, humidity, roads and tracks with incapacitating surfaces, which are a constant menace because the rains cause undermining and, in any case, for several miles inland and all around the coastline of this country it is merely a low level mass of alluvial mud brought down by the rains and rivers from the higher lands stretching back right to the remote zone of Brazil.

BRITISH GUIANA

The ancient race—the Amerindians—are now relatively few in number and have been pushed right to the inner uplands where they dwell in peace and rear cattle (which are driven 500–700 miles to Georgetown for sale), but unfortunately even their limited contacts with the general population (which to some 90 per cent. is concentrated in a 5-mile coastal strip all round the country) has allowed pulmonary tuberculosis to take its heavy toll. The general population is about 450,000 and is a great mixture of every shade from white to black. The dark Guianese distinguishes

himself from the intense melanosis of the descendants of the African (the story of slave transportations is everywhere evident); the small colonies of Chinese have lost none of their facial characters, although their language is clear English; there are a few Venezuelans and Brazilians; a few British "whites"—and then large numbers of true and pure bred East Indians. East Indians in the West Indies is at first confusing. Even Columbus might be, at first, a bit perplexed! However, the story of these is interesting and politically important. When the African slave trade stopped, about 100 years ago, and labour was urgently needed to develop the sugar cane and rice production, families from India were encouraged, by indenture, to come to the country. They did so in large numbers, and scattering up and down the coastline, and despite malarial devastation, increased and increased until now they are clearly numerically dominant. They are thrifty and have many subtle means of financial success. The African negro descendant is more inclined to take life easy and a good weekly dose of rum regularly absorbs his financial reserves. Hence a socio-political problem exists which, of course, the Colonial Officers are well aware. On liberation from indenture a few years ago, only a very small number of these Indians decided to accept the free passage back to India. Therefore medical matters are concerned nearly as much with the multi-racial personalities, habits and beliefs, as with the wide variety of noxious agents, indigenous to such a wet tropical land.

The Medical Services are organized on the hierarchy plan. A D.M.S. at the upper and the D.M.O. the lower end of the scale.



Key

D.M.S. = Director of Medical Services
S.M.O. = Senior Medical Officer
D.M.O. = District Medical Officer

There are a few private hospitals and private general practitioners in the two large towns, Georgetown and New Amsterdam. Otherwise, the territory is served by the

D.M.O.s who are under Government contract but are allowed some private practice. The rural area covered by a D.M.O. is very extensive—and the poor roads and heavy rains make it no easier. It is a hard job, and some of the D.M.O.s have an Area hospital to look after also. The rural dispensary is the G.P. consultation centre, wherein meet also the Health Visitor, District Midwife, the Sanitary Officer, and a man who acts as Dispenser, a useful chap who does dressings, puts up bottles of medicine and acts as a minor diagnostician when the D.M.O. is off in the wilds of his round.

The roads (tracks) are rather scattered, but many follow the rivers. Houses and shacks have no names or numbers: the doctor calls in if he sees a white flag placed at the door! It may be a week or more before he can be round that way again. It is all a clinician's world. Nutritional deficiency abounds. Hypoproteinosis is manifest or borderline in many, especially babies and yound children. Breast feeding may be given up in favour of cereal or flour water—strange and saddening beliefs exist that milk causes diarrhoea and intestinal parasites—thus the protein deprivation causes generalized oedema and fatty liver enlargement or, in others, gross wasting. Cows are not very productive and the general shortage of milk is serious for a large number of children. Dried milks are expensive to import and Government subsidy is uncertain.

Infections are common at all ages, enteric fever, ankylostomiasis, amoebic and bacillary dysentery. Pulmonary tuberculosis is rampant in some areas; leprosy is sporadic, but the doctors are alert to the early diagnosis of the cutaneous and neuritic lesions, thus quick chemotherapy can cure it and attempts are being made to close down gradually the rather large leprosarium—but there is the ever-menacing risks of more Hansen's infection moving in at the Brazilian frontier where many more cases exist. The D.M.O.s do all they can to co-operate and help in the health education programmes in the villages, making full use of the Community Hall which is seen (usually next to the Police Station!) in each area. A feature of British Guiana is the large sugar plantations, all very well organized under the large Sugar Corporations and have their own whole-time doctors in their Medical Services. These are good jobs but so much trouble arises from the excess "compensationitis" which abounds in the labourers. The hot climate does not, at the best of times, lend itself to an energetic approach, and minimal injuries are made the most of. Litigation is common, even over trifling matters, and seems to be, in part, an outlet for emotional unrest or for a passing phase of self-importance. A very minor legal action in the courts will attract an endless following as witnesses and observers—almost a childlike gathering.

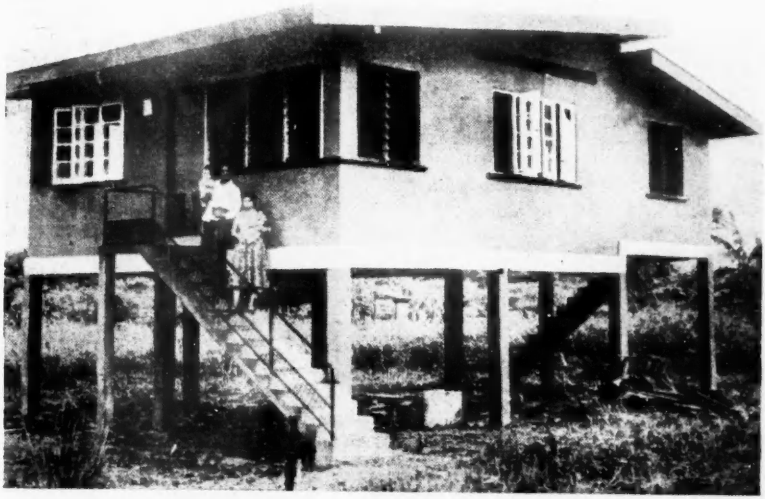
Georgetown is in part quite a modern city—at least that part which was replaced after an extensive (and useful) fire a few years ago. Bookers, the great commercial firm, have developed the place well and there is an excellent natural history museum and zoo, and a fine general library in the city. The lake in the zoo contains an assortment of alligators which soon make themselves apparent if a bird alights on the water. A walk round the town is very pleasant—good houses, many built up on stilts to counter the floods (see Plate II). The Anglican Cathedral is an enormous and impressive all-white wooden building. There is a canal system of flood drainage down the centre of the main roads and one has to be careful after dark. These arrangements, together with the uncertain insulation of the common domestic surface latrines, tend to risks of typhoid, Weil's disease and ankylostoma duodenale. The Sanitary Inspector is a very important man indeed, and the D.M.S. sees to it that they are never in short supply.

The country has many rivers, and alligators are very numerous but only occasionally dangerous. Snakes are more troublesome and the common scorpion is a shocking nuisance from its attacks.

The extensive ricefields, worked on almost entirely by the East Indians, provides the staple diet for many. But only those capable of producing first-class crops are allowed to grow rice. The Government is very reluctant to have to import rice—it is too great a drain on the national budget and exchange.

The main hospital—"The Public Hospital"—is a fantastically busy place. There

PLATE II



One of the new concrete houses on stilts being built in British Guiana.

is a perpetual queue of people waiting to be seen—many hoping to get a mysterious bottle of a placebo—but the clinical material in the wards is wonderful. Disease is rampant and advanced anaemia and infection due to hookworm is treated at out-patients if the Hb. is 30 per cent. and admitted if below 20 per cent. In the infectious diseases wards—wards in the main hospital campus and only slightly demarcated from the others—I saw 40 enteric fever cases (all ages) with nearly the whole range of symptoms and signs but, owing to chloramphenicol, hardly any complications. Many of the population must be (by virtue of subclinical infections) immune to the typhoid fevers, but even so no organized scheme for preventive typhoid vaccine has yet been involved. Serious grade rheumatic heart disease, syphilitic aortitis with aneurysm, liver cirrhosis with associated neuropathy and "flapping" tremor, severe respiratory infections, hepatitis, Weil's disease, amoebic liver abscess, were all about, and hypertensive disease and cardiac failure in the Negro groups and chronic emphysema in the East Indians (and rarely the other way round) was of interest in terms of racial susceptibility. Filariasis could be seen in its acute lymphangitis form and many cases of ultimate limb elephantiasis were seen in the town. Tetanus is common in both babies and adults and the mortality is fairly high. The Surgeon-specialist (in fact a very general surgeon) has almost infinite scope in visceral and limb surgery. Thoracic Surgery and Neurosurgery are hardly existent yet, but are noted as a need. Ocular disease is mainly cataract and glaucoma, but "nutritional corneal ulcer" is frequent in children.

Preventive medicine is given a high priority in all the schemes. The D.M.S. has his "Health" section which acts, so to speak, nationally. Doctors attached to the health department tour the land with Health Visitors. B.C.G. vaccine and anti-filarial schemes are active. Malaria, until recent times almost a hopeless problem in a rain and *Anopheles*-ridden country, is under firm control, thanks to Dr. Giglioli and his D.D.T. mobile teams. The hospitals are very overcrowded. I have seen three infants in one cot. Home Care and some Domiciliary Nursing Services are needed. Hitherto, the housing has been very bad (there are still some of the original barrack slums of the slave days), but that is improving rapidly. The wooden shacks are being replaced by concrete structures (see Plate II). The people are being interested in "self-help" housing and building arrangements and many can be seen building their own homes, under supervision. Town planning is good and an orderly scheme is now proceeding, which is in contrast to the previous shanty-villages.

The Education Officer has a permanent headache trying to keep up with the increasing population: ordinary schools can barely meet it, but there is an excellent group of Higher Schools for those who can get in. A School Health Service is being developed. Many schoolchildren have moderate protein and vitamin deficiencies and the hookworm is a great nuisance in this age group; and occasionally sickle-cell anaemia with splenomegaly is detected.

The fecundity in the coloured population is high, but there is a good deal of pelvic sepsis, luetic disease and gonococcal infection. Gynaecological disease is common and there is a very high incidence of ectopic gestation. There is a high incidence of pregnancy toxaemia, and eclampsia is almost a daily occurrence. The Medical Staff live in quite good houses in the general campus of the Public Hospital and excellent clinical meetings are held each week which is a very creditable performance and a worthy method of neutralizing the otherwise possible apathetic effects of clinical isolation and the almost insufferable burden of feeling so very remote from any centre. They are certainly delighted to have a medical visitor and my time in British Guiana was a valuable experience—both ways—I ventured to hope.

TRINIDAD

Distances are elusive in the Caribbean. It is over a thousand miles from Trinidad to Jamaica: so it is not surprising that there is very considerable autonomy in the various parts of the B.W.I., each island is truly insular and keenly aware of its own

historical background. Trinidad (Columbus's name for the island after seeing the three mountains) carries some residual indications of the original Spanish occupation, but these are nearly smothered now by the general modernizing, especially around Port of Spain, its largest town, and the financial success of oil production in the southern half of the country. It is the only island in B.W.I. which has any reasonable hope, in any year, of balancing its budgets. The political situation is very complex. As in British Guiana, there is a rising percentage of the descendants of East Indians (but they all resolutely regard themselves now as West Indians) out of a total of 700,000 people. The country is attractive, flat lands to the west and mountain forests to the east. The sunrise and the sunset is nearly always a wonderful picture, and the length of daylight varies little more than half an hour all the year round. There is unlimited interest in this country. The forests harbour large numbers of monkeys, one variety being a carrier of the yellow fever virus. Snakes also exist, but their main nuisance value is their liking for the citrus trees which fill the little valleys and the banana trees—thus the fruit pickers need keen eyes.

Research on viruses has reached an advanced stage; there is an excellent institute (financed by the Rockefeller Foundation) in which Dr. Downes has tracked down a wide variety of specific viruses infecting animals and man. Public health is excellently organised in Trinidad—in fact, there is a tradition in that line, but there is a never-failing need for alertness in this efficient hygienic control. Infections would otherwise be utterly rampant. Even as it is, the picture of England in 1900 is still to be seen—diphtheria, typhoid fever, tetanus, and puerperal sepsis, with malaria, dengue, yellow fever here and there. Rheumatic carditis, with an exceptional incidence of aortic valve damage, is rather common in children and in adolescents, and syphilitis aortitis is a troublesome problem in the middle age groups.

The administration is similar to British Guiana, but the Colonial Hospital at Port of Spain is an attractive place and the clinical material abounding. A Registrar would have a wonderful experience and I hope that some such visiting arrangement might be developed. Every conceivable variety of disease and pathology is there. There are some specially troublesome matters, such as severe waves of gastro-enteritis as an additional factor, and often a lethal addition, to the common protein-deficiency syndromes: and whole sections of the obstetric department given to the care of severe toxaemia of pregnancy—and yet, as throughout most of the B.W.I., there is rarely a case of pulmonary embolism. It may be something to do with the local diets and such matters as blood lipoproteins and fibrinogen—but all this calls for medical research on a big scale, and Trinidad would be a good place to do it because the various races, whilst forming cohesive communities, have preserved their racial ways of life and their special food habits.

Clinical pathology and bacteriology is really exciting: the distribution of adnormal haemoglobins and the sickle-cell anaemias; the bacterial and the amoebic intestinal infections; the several spirochaetal diseases, including yaws and syphilis. Tuberculosis is dealt with most efficiently—the Caura Hospital is a model of what can be done by effective combination of chemotherapy and thoracic surgery, and a follow-up in all detail including a rehabilitation-occupational centre. Tuberculosis has carried a strong anti-social stigma, thus these good preventive and curative services are rightly praised. Leprosy cases are still incarcerated in a small island three miles offshore—an enlightened medical officer liberated a few cured cases a year or so ago, but they were quickly chased up and sent back by the indignant and fearful administrative authority! I consider that this is a sad affair and needs a real fact-finding inquiry. However, as in British Guiana, Hansen's disease is now being recognized early (new cases are quite rare) and, so we may confidently hope, in a quickly curable stage.

Trinidad is full of interest to those that seek around: the Golden Grove Prison for Adolescents has excellent humanizing influences for the local equivalent of the Teddy Boys; and an Approved School for boys of 8–12 years is run on simple faiths and common sense; in a rural zone there is the (now famous) Imperial College of

Tropical Agriculture, where students from every country in the whole Commonwealth get together and where agricultural research is having a great influence on the economic productivity in all tropical and sub-tropical countries. An area of Port of Spain—"Shanty Town", to me the world's worst collection of derelict but inhabited shacks—is such an eyesore that the local authority built tall and colourful advertisement signs to obliterate the site during a recent Royal visit to the island! A day with a D.M.O. was interesting—all morning as a "state doctor" at a "Health" Clinic, which is really a long line of people seeking the bottled cure for every symptom (neurosis is common to the East Indian and to the Negro) or the essential vermifuge. An afternoon doing his private practice, on a ready-cash system of 2 B.W.I. dollars minimum, and visiting his local cottage hospital. The job is good, full of interest since the patients' personalities are each so unique and many dwell in the mystic; but the D.M.O's. clinical sense must be clear—in his hospital he deals with a good range; diabetes mellitus, toxaemia of pregnancy, an enteric case (there are no isolation hospitals and "fevers" are just general medicine), tropical ulcer, chronic emphysema with failing right heart, and so on. I was glad to see the Princess Elizabeth Home (our present Queen opened it) for physically handicapped children; to Dr. Reed, the local visiting G.P., it was clearly the apple of his eye and a treasured hobby of his life. The surgeons in the Caribbean hospitals spend a whole day in rather small operating theatres working through long lists; air-conditioning is partly successful, but the surgeon's comfort is not guaranteed on some hot humid days. The obstetricians are a heroic lot, there is hardly a moment's peace. The Trinidadians, like most West Indians, combine the social with a high biological potency, thus reproduction has a raised frequency and the midwifery services, hospital or domiciliary, are never slack. The mechanisms of birth rarely cause trouble, but the medical aspects—toxaemia, anaemia, nutritional disorders, pyelonephritis and gonococci—do.

Thirty miles south the other sizeable town—San Fernando—is a mixture of the old Spanish influence and the modern oil world. A new hospital, 300 beds, a keen group of doctors and a first-class nursing school staff, attracted me, and I was soon "at home" when I found that the Matron was a Sister on one of my wards in Birmingham 12 years ago, that the Assistant Matron (Miss Waterman) was at the B.R.I. until two years ago, that Dr. Wattley (Physician) is an M.D. Bristol (was Dr. Orr-Ewing's House Physician), that Mr. Briggs, Obstetrician, knew Bristol in some detail, and that Dr. Bruce Symonds, who had been a guest at our South West Paediatric Club meeting at Bristol, had a main hand in the Child Health Services in Trinidad, and is specially interested in the "Sugar Babies". I required no further introduction. A nice climate, sea-bathing nearby, a visit to the newer oil drilling grounds, and the magnificent medical buildings and oil research station of the Petroleum Company and a walk over the famous pitch-lake, all toned in well with a surfeit of daily clinical activity. Strange forms of cardiomegaly in childhood were mingled with distressing cases of tetanus neonatorum admitted from the country districts. A cyanosed black (sic) woman, aged 36, arrived and died in severe dyspnoea—necropsy showed the Tetralogy of Fallot. I relieved this day by a visit to a D.M.O. who took me over a sugar factory, the crushing machiner is immense and heavy and serious accidents occur.

The surrounding country of Siparia, contains every evidence of a struggle between human life and the economic limits of false standards in a country spuriously rich in oil but truly dependent on agriculture. A man is quite content to live with his large family in a two-roomed pile-supported shack but keep a car in the space underneath—petrol is very cheap and plentiful. There is no Children Act: deprived infants are numerous. "Baby farms" are in evidence. I visited one with 15 children under 2 years, all in a three-small-roomed wooden house—under the care of a woman receiving an occasional dollar from a baby's mother. The arrangement, of course, is amazingly loose, but typical of a country struggling to find some order out of the chaos of excess population, a matriarchal system of life and a direct effect of the sudden granting of "freedom" to the negro slaves a hundred years ago. It has never

really sorted itself out—and all this is now of some significance in the troubles of the proposed B.W.I. Federation and future Dominion status. The medical aspects are complex enough, but the socio-political position is only stable through a continued ostrich-like view of a very limiting commercial strength. But Trinidad is facing its problems at last (at least, so says their brand new Government) and I shall certainly follow Caribbean affairs with great interest and some local knowledge.

The Windward Islands, comprising St. Vincent, Dominica, Grenada and St. Lucia, provide a wonderful tour over a distance of about six hundred miles. Each island is so different and yet each is essentially land around an ocean mountain.

ST. VINCENT

One hundred and fifty square miles, population 74,000, and famous for its arrowroot (it provides 70 per cent. of the world's supply), is a well-organised island with good medical services and friendliness. Kingstown (18,000) has the central hospital which is a meeting-place for all the doctors and Mr. Gun Munro, the Surgeon, is a first-class leader. We had several rounds and here I saw an incredibly large left hydronephrosis. The D.M.O.s and the domiciliary midwives have to travel up and down and across the island—the coast road is fairly good, but the rest are tracks only. One D.M.O. moved around on horseback, his journeys running through banana and coconut plantations on the leeward side and through the arrowroot fields on the windward. The only car possessing a reasonable life is a Land Rover: and petrol is 75 cents a gallon. The population is almost entirely negro with its easy-going life. Each island has its own government and system of ministers who, through the Administrator, is responsible to H.M. Governor who resides in Grenada. It is all a perpetual struggle between appointed power but without available money to make any visible progress. The Nutritionist is as important as anyone—it needs a lot of advice to get the most out of the limited home produce (again milk is scarce) and wean mothers off their use of "bush tea" or an undue faith in a bottle (usually and desirably blue) of coloured water hanging over the house door! "Bush tea" can be unsafe—digitalis or aconite poisoning cropping up occasionally.

On this island I met Dr. Lamb (Lecturer in Pathology in Birmingham when I was a student, 1923): he is now ordained in the Anglican Church but places his special experience in forensic pathology at the full disposal of the judicature of the Windwards—and the judges told me of his value in sorting out the subtle tricks of homicide in these remote parts. There are many thinking people on the island, facing up to the legacies of an isolation for many years. There is a general happiness—the sun, the air, and the sea, lend themselves to that, but there has been barely any attempt at any inter-island co-operation so far. Each has been content and satisfied to export its bananas, or its grapefruit, sugar, coconuts and copra, cocoa beans or nutmegs, and import its white flour, tinned foods and English potatoes. Hence, boats come and go in the pretty harbours, yet only a handful of St. Vincentians may know anything about the Grenadians only 60 miles away. Clearly, one of the first things in Federation is to get better links and the medical staffs on the islands must learn about wider co-operation and interchange of knowledge and ideas. W.H.O. has given aid in this way by their experts conducting overall attacks on yaws—which is easy to clear even with one massive dose of penicillin, and syphilis—which is difficult to clear because the re-infection rate is so high. Tuberculosis in these Windward Islands needs inter-island team work; the present arrangements are quite unsatisfactory.

DOMINICA

Area, 300 sq. miles, population 60,000, and named by Columbus on his third visit to these seas, has many signs of its long French occupation and the terrible Franco-British battles on its shores, until the French decided to move out and live in peace on their own West Indian islands—Guadeloupe and Martinique—which can be seen

about 50 miles away. The general plan of medical work is similar. The only English church has a congregation of about 100—the rest of the people are Roman Catholics. The colourful pageants and Saints' Days arouse the people periodically from the lethargic influences of the brilliant sun and heat of the day and put them into a happy mood for the long moonlight nights, when the air is rent by drones of a "Steel Band" (empty oil drums of various sizes). Puberty and fecundity seem sometimes to synchronize. The long warm moonlight nights in these tropical latitudes carry their own social problems. An ante-natal clinic in Dominica shows at once some reflections of this—95 per cent. are unmarried—the matriarchial system is accepted and the man's place in nature is to be effectively biological. There is a new and well-organized hospital with very good facilities, colourful wards, and each patient has a bedside dressing table! A round revealed a good selection—appendix abscesses, the usual "kwashiorkor"-like syndromes, several ununited fractures (a troublesome thing in the B.W.I.), "fevers" of all varieties, and the ever-troublesome tuberculosis. A R.C. Sister of Mercy is an acting Hon. Surgeon (M.D. Louvain) and her skill is admirable.

This is the only island wherein reside the few (about 400) remaining Caribs who originally moved from the Central American mainland. During my stay on this island, several tons of U.N.I.C.E.F. dried milk arrived for the young pregnant women and nursing mothers and the young children—enough, we considered, for about three years. Breast feeding continues for about nine months (the R.C. welfare centres have a hand in this) and maternal care is good. Birth has its risks, however, even there: I was asked to see a typical case of quadriplegic cerebral palsy in a child following a difficult breech delivery and severe clinical anoxia.

The island prison contained 68 men and 1 female! The Mental Hospital was next door and the prison governor supervised it—the incarceration was not very dissimilar. However, to the comfort of many, there is a magnificent dental treatment centre in Roseau, which the Senior Medical Officer considers is a mainstay to the peaceful population. Each of the Caribbean Territories prides itself on its own rum. Dominica converts all its sugar cane into rum and even imports more from the nearby French islands, reaching a total annual island turnover of 120,000 gallons in home consumption. This might have something to do with the troublesome incidence of tuberculosis; however, cirrhosis of the liver is rare and alcoholic poisoning or neuropathy is practically unknown. Perhaps the limited protein but high carbohydrate and fruit diet is helpful after all. As Roseau jetty takes in the rum, the other small port, La Souffrier, exports large amounts of fresh lime juice.

There was a sad moment just before stepping into the boat to get to the seaplane. A friend of the S.M.O. who came with the party to see me off asked me to look at his swollen tongue. I did, there was a massive hopeless epithelioma; with some quickly gathered words I departed—sorry for him and for myself in having to leave so soon—but happy to know that the island volcano was still quiet, although an outburst with a wide river of lava, as in 1930, might again occur at any time.

GRENADA

Area, 130 sq. miles, population 81,000, Cap St. Georges 21,000. The Governor of the Windwards and the Chief Justice live on this island. It is a lovely air-trip from Trinidad, the coral seas and the blue Caribbean being seen at their best. But Grenada was seen at its worst. Hurricane Janet had recently devastated the island. Great plantations were terribly ripped up, so that the commercially precious and almost unique crops of nutmeg (this island supplies 70 per cent. of the world's nutmegs, sold principally to U.S.A. at a good dollar exchange); and the heavy crops of cocoa beans, were nearly ruined. Houses literally disappeared into fragments. I saw a brave population rising to this emergency, and every available space is now planted with a quick-growing biannual-cropping banana tree; it will take seven years to recultivate the destroyed nutmeg and cocoa trees.

All this added to the concern of the S.M.O.: the sanitation and housing provided

a major crisis, and it emphasized that the Windwards are only a geographical grouping —historically and economically they are each distinct. In fact, Grenada (which has a broadcasting centre) sent sympathetic messages to St. Vincent that the hurricane was coming her way—but the hurricane unexpectedly changed its course and rushed over Grenada instead. The Colonial Development and Welfare Funds of the Colonial Office were immediately called upon—and help was given. There is thus a very slow recovery after a few hours of raging wind moving in a circle at 120 miles an hour and hitting everything first left to right and then right to left—and it is the only time that heavy rain is nearly horizontal at land level—all other downpours, however heavy, are nearly vertical and even windows need not be closed.

There are 20,000 children of school age, and increasing at about 2 per cen p.a.—many schools were wrecked in the hurricane—my sympathies were with the Education Officer who seemed to have a nearly impossible job. As in St. Vincent and in St. Lucia, there is an excellent group of higher schools where good general, grammar and technical and science courses are given.

At the Colony Hospital the old classical genes were seen in clinical effect—muscular dystrophy, fragilitas ossium, microcephaly—and a rather rare disease in the Caribbean, athetotic form of cerebral palsy due to neonatal kernicterus. It is noteable that less than 1 per cent. of the women in B.W.I. are Rhesus negative; hence haemolytic disease with severe jaundice is a clinical rarity. The wards were a veritable museum of material; lymphogranuloma inguinale, severe rheumatic pancarditis, infective endocarditis, "infectious jaundice", various treponematoses—and the surgeon showed me his skill in dealing with several amoebic liver abscesses and some of the old-fashioned massive ovarian cysts and uterine fibroids. The clinical laboratories were very modern with excellent up-to-date equipment—large binocular microscopes, special centrifuges, and all sorts of things which I did not expect to find in a small Caribbean island, and research was in progress on intestinal infections and antibiotic action.

The Governor of the Windwards discussed with me a wide range of things—tuberculosis, nutrition, thoracic surgery, island economics, family planning as an urgent need, the hope (as remote as it may seem) that there may be a balance between numbers and agricultural possibilities. Just to add to the troubles, a rat problem has existed since the hurricane—the rodents attacking the sugar cane and sweet potato crops, and causing also small epidemics of Weil's disease. Although surrounded by the sea (and many flying fish) fishing is poorly organized and supplies very uncertain and irregular and there are no means of refrigeration, so in a glut many go to waste. The "health education" schemes—and many good thinking people give time and energy to it—sometimes come to nothing when it is discovered that the parents are selling their fresh hen eggs only to buy white flour for their infants. The dried milk scheme also had its problems, many (and even some of the Health Visitors and midwives) believing that the partly defatted dried milk was no good—that the gift was a fraud—so we spent a lot of time talking about the essential and important proteins. As I left I saw a ship depart after loading 8,000 branches of very green bananas and I was nearly caught in the group of "film stars" who were gathering on Grenada for the making of the new film *An Island in the Sun*.

ST. LUCIA

(Pronounced "Loosha".) Area 253 sq. miles, population 56,000. Capital, Castries 24,000. Even Americans call to see this lovely island in their Christmas-time Caribbean tours. There was a useful massive fire in 1951—so that many tidy and attractive buildings now exist in Castries beside a perfect harbour, which in days past acted as a coaling station and earned for the shipping master in London some £30,000 a year, although he never saw the place: the whole thing ceased after a visiting commission became aware that the coal was carried by women, on their heads and stripped to the waist!

The common language is a mixture of French and English. This was the island which the French would not let go until Napoleon implied he "couldn't care less" for the W.I.—so the military men got out, but many French civilians remained. There are some good four-storey flats and excellent amenities, including good hotels, in Castries. There is a Medical Centre from which the S.M.O. directs and organizes the island's Medical Services. The Centre contains general medical clinics, a Child Health Clinic (the only place in the B.W.I. where I saw the term used) and maternity clinics. D.M.O.s worked in this Centre and worked out in the rural zones at set times. A general hospital was nearby, so everything seemed geographically convenient, and all the doctors seemed to be gathered in a happy social group. In these island services much depends upon the personality of the D.M.S. or the S.M.O. In St. Lucia this was well supported by the Specialist-Surgeon, who radiated confidence, order and versatility. We all gathered at a clinical meeting to see and discuss—interlobar empyema, osteomyelitis of the pelvis, osteomyelitis complicating fractures, staphylococcal abscess of the abdominal wall, typhoid bone abscess, severe typhoid in "coma vigil", insulin-resistant diabetes mellitus (a peculiar type seen in the W.I.), acute facial yaws, congenital hydrocephalus, congenital syphilitic osteitis with good old-fashioned sabre-tibia—and finally a straightforward patent ductus arteriosus. I only wished I had a group of students with me. We suspected a bizarre neuritic syndrome as possible leprosy, and a report came in that a few cases of Bilharzia were present at the neighbouring town of Souffries—but, at the same time, the ever-faithful sanitary teams had cleared up the mosquito breeding grounds and no malaria had been seen for months. The clinical interests need never lag in St. Lucia. On the last day I arrived back in Castries after a day with a D.M.O. in the country, seeing hundreds of patients trying to make themselves understood to us with the strange Franco-English patois. The day was long, but we saw the direct remains of old slave camps away in the hill jungle and as remote as man may be. They kindled some sad memories of our bygone colonial mistakes.

BARBADOS

Area 166 sq. miles, population 223,000. Capital Bridgetown. When the English landed in 1627 and took over this nearly flat coral island (which is about the size of the Isle of Wight), it was quite uninhabited, although there were indications of a remote occupation by Caribs and later Arawaks from South America. The island story is a classic—whites, slaves and sugar cane. Now, there are only about 7,000 whites—the rest are all of African negro descent, and the island is supersaturated with human life. Every available square yard, as is well seen from the air, is used for cane or sweet potato, and houses are squeezed into the odd patches and around the coast: the cows feed on the narrow grass verges of the roads. Some houses are built with coral blocks and remain beautifully white. Barbados is a busy place—they have called it "Little England"—with administration, including the Parliament and the Ministers, in a sort of Lilliputian State. Difficulties abound—for instance the 30 lepers at Lazaretta cost £300 per person p.a., all burnt-out cases occupying many acres of valuable land and buildings. The persistent prejudice about leprosy detracts from the now much more important epidemiology of tuberculosis.

Private general practitioners do most of the medical work in Barbados. The pattern is distinct from the other islands. There are a few D.M.O.s who each act also as an Area M.O.H. Co-operation is not good, mainly perhaps because, even now, the island is divided up into Churchwarden Areas, the original governing power of the slave population being through Churchwardens! The Anglican Church is strong, but now there are thirty different "churches and chapels"; and, in any case, the "Churchwarden" is now a politician. The slave owners, no doubt, originally gained some release of conscience through the Churchwarden system! Medical and social problems are common and not helped by the regular increase of the population by 2,000

p.a. There is an illegitimacy rate of 57 per cent. (1950) and 61 per cent. (1955), and an infant mortality rate of 134 (1955). There is the usual infinite range of disease at all ages—a medical or surgical registrar would be able almost to "complete his education" in Barbados—there is, in fact, literally too much of it; and every woman over 30 years of age has palpable fibroids! One hears little about tonsils, but there are interminable lists of hysterectomies.

Everybody in authority seems to be planning *something* in Barbados, but the essentials of "Family Palnning" are only just existent. If it doesn't become effective soon everthing will crumble. The D.M.O. and the hospital staffs are usually overwhelmed with pressure of cases, mainly because no serious attempts to push health education or home-care have been taken until quite recently. A year in Barbados is certain to give any doctor or nurse or social worker a completely new approach to life, and certainly may have happy memories of bathing in the clear coral sea; also watching the subtle skills of the Barbadian with a cricket bat and ball—some of which we hope to see in England this summer of 1957.

Dr. William Hillary (1697–1763), physician in Barbados in 1746, wrote on "Observations on the changes of the air, and the concomitant epidemiological diseases, in the island of Barbados" and included an original and most accurate description of tropical sprue, but at the same time he noted the island to be pleasant and more preferable to Jamaica.

As a young doctor (30 years ago) I would have revelled in the clinical world of the B.W.I. It may be summed up: "Many of us in Britain are apt to forget the enormous sea distances between the countries and islands which make up the British West Indies. They form a vast semicircle, which covers over 2,000 miles, starting on the Central American mainland in British Honduras, and passing through the Cayman Isles, Jamaica, the many Leeward and Windward Isles, Barbados, and Trinidad, to end at British Guiana on the northern coast of South America. We forget that the journey from Jamaica to Trinidad is roughly the same distance as that from London to Moscow or Istanbul. Yet these scattered lands are closely linked racially; less than 5 per cent. of their peoples are of unmixed European descent, and the majority are African Negroes, with a proportion of East Indians and a few Chinese. They are also linked economically through their agriculture; all of them primarily grow sugar or bananas, with smaller quantities of citrus fruits (Trinidad stands alone in having a rich supply of oil and asphalt). A tropical climate modified by the closeness of the sea is common to them all; and they share too the same historical development. It is hardly surprising, therefore, that they have the same medical problems.

"Anyone from Britain visiting a general hospital in the West Indies would be struck by the amount and variety of the diseases that can be studied there; but nearly always there are the dreadful complications of poverty and malnutrition to modify the clinical picture and hamper treatment. Yet, superficially, the similarities to British medicine are perhaps more striking than the differences. Typhoid fever, malaria, sickle-cell anaemia, lymphogranuloma venereum, and some specific effects of malnutrition (especially in children) would be the only unfamiliar diseases that the British doctor would commonly see in the general hospital. And he would note with interest the scarcity of emphysema, mitral heart-disease, and neurological conditions such as disseminated sclerosis, subacute combined degeneration, and tabes (despite the prevalence of syphilis). On the other hand, acute lobar pneumonia, paraplegia (often due to cervical spondylosis), acute rheumatic fever (in contrast to the rarity of mitral stenosis), hypertension and its complications, and (possibly linked with hypertension) eclampsia are common."

Strangely enough, cigarette smoking is common, but I heard very little about carcinoma of the lung.

The Teaching Hospital and Medical School of the University College of the West Indies, at Jamaica, is flourishing. I agree with Dr. Ian Grant (who recently paid a goodwill visit to the Caribbean branches of the B.M.A.) that, with a continuance of

goodwill on both sides, a very real improvement will take place, both in the Government-doctor relationship and in a much more efficient medical service for the people.

After these eight weeks of action—10,000 miles by air—the plane moved off the runway at Barbados at mid-day on Saturday, 30th September and I was home in Bristol on Sunday evening—this sudden jolt from one world back into another was perhaps the greatest maladjusting disturbance of the whole affair—a more sensible person would have taken a ship and more gradually eased the mind.

Since that is now all over I am finally reminded by the Colonial Office that:

"It will contribute considerably to the success of the scheme if the visitor is prepared to devote a fair amount of time and thought to the Colonies he has visited, when he returns home. If he has succeeded in arousing interest or in getting some project or other going, he may expect to receive quite a flow of correspondence in that connection which will undoubtedly make demands on his time."

Exactly! I have certainly accepted a long-term responsibility. If any young doctor wants guidance about work in the British West Indies, I am at his service.

FROM BLUE TO PINK*

BY

E. G. BRADBEER, M.R.C.S., L.R.C.P., F.F.A.R.C.S., D.A.

Consultant Anaesthetist, United Bristol Hospitals.

My first duty is to thank you for the honour you have conferred on me in electing and installing me as your President. I am aware that there are a number of my contemporary colleagues who would fill this high office much more ably than I, and I feel therefore, that my adornment with this handsome Badge of Office is in part, at all events, a compliment to my specialty, and so, unworthy as I am, I felt constrained to accept nomination on behalf of my anaesthetist friends. Talking of unworthiness reminds one of the story of the advice which was being given to the young man: "Never tell your girl friend you are unworthy; let it come as a surprise."

Two anaesthetists have previously held the Office of President of this Society. The first was our dear old colleague, the late Dr. A. L. Flemming, who was Senior Honorary Anaesthetist at the Bristol Royal Infirmary, and for whom I had the honour and privilege of deputizing very frequently during his last few years on the Staff. The second was our old friend, Leonard Moore, who now lives in Cornwall, enjoying a well-earned retirement. They were both my senior colleagues, together with the late Stewart Stock, when I was appointed Honorary Assistant Anaesthetist to the Bristol Royal Infirmary in 1925.

PROGRESS IN ANAESTHESIA

The choice of subjects on these occasions is left to the President, and it may be medical or non-medical. It seemed to me that, in my case, the subject chose itself. The progress of Anaesthesia has been so great during the past 30 years, and I have been privileged to have been actively engaged in anaesthesia during this time, and exclusively so during the major part of it, that I thought a general survey of the changing concept of anaesthesia over this period might be of interest.

I do not propose to tire you with detailed descriptions of drugs, techniques and apparatus, but to give you my impressions of the various changes which have taken place in the specialty since the end of the First World War.

Those of you who may not have entered an operating theatre for 30 years may be interested in more recent developments, and those who are more recently qualified may feel stunned and somewhat aghast at the old rough-and-ready methods which were in vogue at that time. I regret that I cannot claim to have invented or discovered any new method or drug, yet I have been privileged, with my colleagues, to take part in the introduction in this region of all the new drugs and techniques during this period. Moreover, some guiding hand, from a sphere even higher than that of the surgeon, led me to avoid and discourage those methods and drugs which subsequently proved to be of doubtful value.

In order to obtain some sort of perspective, perhaps we should very briefly scan the past century, for anaesthesia as we know it is of very recent origin. By present-day standards of speed, it seems strange that it took so long for the known pain-relieving effects of nitrous oxide and ether to be actually applied for the relief of pain during surgical operations.

Priestley, who in 1771 had discovered oxygen, described in 1777 the gas Nitrous Oxide, and the properties and potentialities of this gas in respect of producing unconsciousness were described by Humphry Davy in 1799, whilst working here in

* Presidential address: delivered on 10th October, 1956.

Bristol at the Hotwells Pneumatic Institute, and he also suggested that the gas might be used in relieving pain of surgical operations. In 1818, Faraday discovered the narcotic action of ether, but still no application to surgery. Henry Hill Hickman, the Shropshire lad from Ludlow, published his paper, "A letter on Suspended Animation" in 1824, following his operations on animals which he rendered unconscious with Carbon Dioxide. I must apologize to you and to the memory of these distinguished men for so briefly mentioning their achievements, but, as I said before, I wished to draw your attention to the time interval involved.

It was not until 1844, nearly half a century after Humphry Davy's observations, that the actual use of nitrous oxide as an anaesthetic was inaugurated by Horace Wells, the Connecticut dentist. The first experiment was carried out with Wells himself as the patient. I am sorry we cannot dwell on the thrilling story of this epoch-making period, but merely pause to mention the names of Morton and Jackson and Crawford Long and the use of ether in 1846, and the introduction of chloroform by James Young Simpson in 1847. Then there followed the immortal John Snow and his successor Joseph T. Clover.

From this period until the early 1920's, general anaesthesia for everyday routine use consisted essentially of chloroform, ether, nitrous oxide and ethyl chloride, either separately or in combination, administered either by dropping on to a gauze mask or by some apparatus such as Clover's bag, and later, by Junker's inhaler, Kelly's apparatus or Shipway's apparatus.

Thus, although there was a very long period with no practical application of any really improved method of anaesthesia, the groundwork of many of the recent advances took place, such as the invention of the hollow needle in the last century, endotracheal intubation by MacEwen in 1878, and spinal analgesia by Corning and by August Bier, with Bier himself being the first volunteer in 1899.

You may well ask, that having obtained a method of anaesthesia which had been more of less successful for seventy years, in what direction could improvement lie? To consider this we must remind ourselves of the basic requirements of an anaesthetic:

1. Comfort and well-being of the patient before and after operation, with the absence of psychological trauma.
2. Safety of the patient, not only of life, but safety from subsequent temporary or permanent complications.
3. Perfect operative field for the surgeon.

MY EARLY DAYS

I would like to tell you of my own introduction to the practice of anaesthesia. On my first day as a surgical dresser, I was told to be in the anaesthetic room and to function as a "holder-down". The anaesthetist was a house-physician who had just been demobilized at the end of the First World War, and he considered himself quite an expert anaesthetist. His technique was to have four "holders-down", one for each arm and one for each leg, whilst he himself dealt with the head. He then wrapped a towel around the patient's face, leaving the mouth and nose at the bottom of the well thus formed. A gauze mask of the Schimmelbusch type was placed over the hole, and another folded towel draped over all. Disdaining the ether dropper in the cork, which he always removed, he then proceeded to pour half the eight-ounce bottle of ether on to the towel, and everbody was told to hold tight! When all struggling ceased the patient was ready for operation.

I was very frightened of anaesthetics for some time after this, although I was to learn that it was possible to induce anaesthesia in a less brutal way. It may be that the very horror of my introduction led me later to take an interest in anaesthesia in the hope that one could, perhaps, do something to alleviate the fear that seized patients at the prospect of being anaesthetized.

In those days, anaesthesia was a part-time hobby, and one earned one's living by other means, usually general practice. In the twenties, there were four anaesthetists at

the Royal Infirmary, and the youngest of my three senior colleagues was over twenty years my senior. During my early years on the Staff, on the few occasions when my services were requested in private by a certain well-known surgeon, the following monologue was invariably recited: "Good morning, Mr. So-and-so, I am very sorry to say that Dr. Flemming is ill and Dr. Moore is away, and so I have brought along Dr. Bradbeer." We did not have L-plates in those days, but I might well have introduced them.

EARLY ANAESTHETIC APPARATUS

We are accustomed nowadays to see elegant, stream-lined, chromium-plated anaesthetic apparatus in the theatre, and the machines of the 'twenties would now appear to be very primitive. Many were home-made, and the bottles for the water-flow-meters and the chloroform and ether containers were usually Hornby's milk bottles. Even so, newer machines tended to be bigger and better. Some of you will remember Stuart Stock, one of whose hobbies was wood and metal working, and who was an expert model-yacht builder. He decided to build the biggest and best anaesthetic machine yet, and when he had built the trolley and framework, he installed it in No. 1 anaesthetic room. Now, I always think this is where he made his big mistake. On the framework at the back, he put a large blank sheet of paper with the inscription "Any suggestions"! I do not think this is the time or place to record the proffered advice.

Another interesting machine made by a member of the surgical staff who was interested in anaesthesia, was like a magnificent radio set, with lots of knobs. Its only disadvantage was that whatever knobs were turned, the resultant mixture was unpredictable: at various times not only gases and vapours issued from the delivery tube but also liquid ether and liquid chloroform, and even water. It was rumoured that, on one occasion, a glass of George's Home Brewed issued forth.

One of the first dental gases I was asked to give in private was interesting from the point of view of apparatus. It was an extremely respectable and old-established Clifton practice, and I expect I was asked because Dr. Flemming was ill and Dr. Moore was away. This practice had not adopted the new-fangled cylinders of nitrous oxide, but still made its own gas in the basement, storing it in the surgery in a gasometer. I have not seen one since, and I feel very privileged to have had the opportunity of using it. The dentist, poor fellow, passed on soon after my visit!

Nitrous oxide is a very weak anaesthetic, and when used for major surgical work must be combined with some other drug, and in those days chloroform and ether vapours were added, most of the machines being modelled on Boyle's apparatus. The flow of gases in these machines was measured very roughly by a water-flow-meter, and one had to rely on anaesthesia being produced by the chloroform and ether, as with the open drop method. One striking difference, however, was that the patients under this form of anaesthesia were a far better colour, sometimes referred to as "Bristol Pink", and they also finished up in far better fettle than under the open-drop method. One was led to the conclusion that it was the higher percentage of oxygen which contributed to this result. It occurred to me, therefore, that if a Boyle's machine was not available, all one needed was a cylinder of oxygen and a piece of rubber tubing to lead a gentle flow of oxygen under the gauze mask in the open drop method during the whole of the operation. You may well smile at this as being very elementary and obvious, but I can assure you, ladies and gentlemen, that this was not the reaction it produced in the operating theatre in those days. The request for a cylinder of oxygen was a signal which drew all eyes to the patient's face, the assumption being that his demise was expected at any minute, if indeed, it had not already occurred; and so, in order to avoid spreading alarm and despondency, one had when adopting this method to smuggle an oxygen cylinder into the theatre surreptitiously.

One other factor which contributed to the more satisfactory condition of the patient when using the Boyle's apparatus was the more adequate depth of breathing, due to the slight build-up of carbon dioxide in this semi-closed method.

There were three important developments during the latter part of the 'twenties. None were altogether new, but their adoption in routine practice was.

BASAL NARCOTICS

The first concerned basal narcosis, pre-operative sedation. Many anaesthetists used morphia and atropine, but others omitted the morphia on account of the depression of respiration, particularly in association with chloroform anaesthesia.

One of the factors which stimulated the investigation and extension of pre-operative sedation was the relative failure of local and regional analgesia for the toxic thyroid. The earliest and most successful drug for this purpose was rectal paraldehyde. This was relatively safe, very effective and what was very important, did not depress the respiration. I said it was relatively safe, bearing in mind one fatality which came to my notice where ounces were administered in mistake for drachms. After hearing of this case I always wrote the word *drachm* in preference to using the rather unsatisfactory wiggly symbol.

The successful and safe use of paraldehyde in thyroidectomies with the advantages to the peace of mind of the patient soon led to its use as a routine pre-operative procedure in all branches of surgery, especially children. The chief objection was its very penetrating and rather unpleasent smell. Rectal avertin, known now as bromethol, was introduced about the same time, and was favoured by many in preference to paraldehyde. Its action was more certain, but it needed very accurate measurement of the patient's weight, colour-testing of each individual dose and correct temperature at the time of administration.

INTRAVENOUS ANAESTHETICS

The first of the intravenous anaesthetics—Pernocton—came to us about 1928. It was stable in solution, and its effect in producing sleep was as immediate as with the later Evipan and Pentothal, but the depth was not so profound: that is to say, a painful stimulus would produce reflex movement. Its chief disadvantage, was its very long period of amnesia, as shown in the following case. The patient was an Indian lady; incidentally, she was one of the most gracious, cultured and kindliest women I ever met. The operation was hysterectomy and she was in a private ward at the B.R.I. Two hours after return to her ward she was talking quite rationally to her nurse and behaving quite normally. Two hours later the nurse looked into the room and found her out of bed, dressing and saying she was going home Now, on the following day the patient had no recollection whatever of this incident, and I am glad to say that no untoward complication arose.

The barbiturates, sodium amytal and nembutal were also used by the intravenous route. Then in 1931 came Evipan, a new barbiturate which produced a short period of anaesthesia deep enough to perform surgical operations without the use of any supplementary anaesthetic. In 1935, Pentothal (sodium thiopentone), similar in action, was introduced, and very soon became universally popular for short surgical procedures and for basal narcosis. It was also used for longer operations in the form of a drip or by intermittent injection, the disadvantage for this purpose being the profound respiratory depression and consequent anoxia, and so nitrous oxide and oxygen was usually administered as well, chiefly for the benefit of the richer oxygen content and slight carbon dioxide build-up.

Although Pentothal was introduced as a very safe form of anaesthesia, it has in fact, proved to be one of the most lethal. Some people claim that it has killed more people than chloroform ever did. It has been said that at Pearl Harbour more people died as the result of Pentothal administration than from enemy action! Whether this may be true or not, it is, of course, the old story; the drug is safe enough, its danger lies in unskilled administration. I should also mention amongst the disastrous complication of Pentothal, the inadvertent injection of the drug into an artery, and to a lesser extent, into the tissues.

SPINAL ANALGESIA

Spinal analgesia, since its introduction at the end of the last century has had a very chequered career, and its early progress was marked by a dismal series of disasters. However, if its administration could be rendered safe, the advantages to the surgeon, particularly in abdominal work, were very great on account of the profound relaxation of the abdominal muscles. Among the causes of the unsatisfactory results at that time were: toxic solutions, absence of standardization of the drugs, inadequate sterilization of the solutions, inadequate control of the spread of the solution in the theca, unwise selection of patients and inadequate aseptic precautions.

My own introduction to spinal analgesia was in 1928, when Dr. Pitkin, a surgeon from a town in the Middle West of the United States, visited the Royal Infirmary during his world tour. He was anxious to do the best surgery, and, handicapped by the low standard of general anaesthesia available to him, had devoted a large amount of time and thought and experiment to rationalizing spinal analgesia and making it safe. As a result of his researches, he produced a solution which was distributed under the name of Spinocain, and this, in conjuction with the correct method of administration and choice of patient certainly proved to be a considerable advance. On the afternoon that Pitkin came to the Royal Infirmary, I was anaesthetizing for Rendle Short, who had two gall-bladder cases on his list. Dr. Pitkin was invited to administer his Spinocain for these two cases and he also performed the operations, with complete success. I think Mr. Jackman will recall Pitkin's visit because he was operating in the next theatre, and invited Pitkin to give his patient a spinal for inguinal hernia, and in his own droll, inimitable way, explained that he had not planted this patient there on purpose, but that it just happened that he was on the list, and was in fact in the anaesthetic room, but the snag was that he had just the worst degree of scoliosis it was possible to imagine. However, Dr. Pitkin was a sportsman and accepted the challenge, but, unfortunately was unsuccessful in finding a way into the theca.

Following the stimulus given by Pitkin and others, spinal analgesia again became very popular, and where used with the correct technique and safeguards was as safe as any existing method of anaesthesia.

Spinocain was followed a few years later by Percain, which was introduced by the late Howard Jones, who also evolved a successful technique. The name was changed to Nupercain owing to a disaster where a mistake was made due to the similarity of the words *percain* and *procain*.

Whereas a tragedy with general anaesthesia usually resulted in death, that with spinal analgesia more often resulted in some permanent paralytic condition, so that the tragedy lived on to the detriment of the method. Most of these misfortunes, however, were the result of untrained or careless administration, often both, for there are many anaesthetists who have given thousands of spinal anaesthetics without a single major neurological complication. The most elementary careless mistake in the injection into the theca of the wrong solution, and it is terrifying to hear of the variety of substances which have been injected into the thecal canal in error. Before the war, I was asked by one of the defence societies to give an opinion in a legal case in which the wrong solution had been injected and the patient died. The defence was that it was the responsibility of the Theatre Sister to fill the spinal syringe, and I was asked to say that this was a usual custom. Now, I had always taught just the opposite and had always strongly held the view that the anaesthetist was solely responsible for the injection of the correct substance. Since I could not agree to appear in a court of law and give an opinion directly contrary to my usual practice and teaching I had respectfully to decline.

There are, of course, many pitfalls in the spinal technique for the untrained and unwary. Another elementary one is the neglect of meticulous asepsis. During the War, when many things were scarce, we were sometimes short of sterile gowns and gloves, and my dictum was that if an operation was to be performed under spinal analgesia,

and there was only one sterile gown and one pair of sterile gloves, then it was far more important for the anaesthetist to wear them for the spinal procedure than for the surgeon to wear them for the operation! I am quite sure it was as important as that, and yet often one saw spinal anaesthetics being given with a peremptory wash-up without sterile gloves or gown.

To pass for a moment to the lighter side, some of you may remember a certain surgeon who practised in one of the Welsh valleys, whom we will call Mr. X, who periodically visited the Royal Infirmary to keep abreast of the times. Mr. X was very portly and had a deep, rumbling voice. One fine day, in our early spinal days, Mr. Jackman was operating on a patient for whom I had given a spinal anaesthetic, and one of our rituals was complete silence in the theatre on these occasions. Who should enter the theatre but Mr. X, and resting his abdomen on the operating table at Mr. Jackman's left elbow, as was his wont, he said in his deep, rumbling voice, "I say, Jackman, did you read about that post mortem where a chap died under spinal anaesthesia?" Everyone was goggle-eyed, but, still silent, pointed to the poor patient. Was Mr. X's face red? I have never seen so big a man shrivel and fade out of a room so rapidly.

Is anything new? I read in a journal a few weeks ago that radio was introduced in an operating theatre in Paris for the benefit if the patient. Mr. Jackman will remember that over twenty years ago we tried this and also let the patient smoke a cigarette during his operation. It was not an unqualified success, however, and we soon abandoned the innovation.

ENDOTRACHEAL INTUBATION

The third important advance during the 'twenties was Magill's introduction, or re-introduction, of the wide-bore endotracheal tube. Previous to this, endotracheal insufflation anaesthesia had been used by means of apparatus such as that designed by Kelly and Shipway to blow a jet of warmed ether vapour through a narrow gum-elastic catheter. This blew a continuous jet of ether vapour, which impinged on one spot in the trachea, and if continued for one or two hours produced a severe tracheitis. Magill's problem was in the severe facial injuries following the First World War, where it was necessary to provide for to-and-fro breathing in the presence of excessive bleeding in the pharynx. The wide-bore endotracheal tube was the answer, as it simply prolonged the trachea to the mouth, and to-and-fro breathing took place through the tube, so that the pharynx could be completely sealed off with a gauze pack.

I am indebted to my old colleague, Angell James, who returned to Bristol in 1928 on appointment to the Staff of the E.N.T. Department at the B.R.I., for stimulating me to adopt Magill's wide-bore endotracheal technique for his nose and throat operations. This was not so simple as it might appear today. I had to acquire all the equipment myself, and this included a modification of the old Boyle's apparatus. As I have already told you, my three colleagues were all very senior, and did not altogether approve of this rather alarming procedure, and forecast the incidence of large numbers of cases of papilloma of the chords. However, I bought tubes, Magill's laryngoscope, set of endotracheal connexions and Magill's modification of Boyle's apparatus, and as Angell James will remember, for the next two or three years when he had a case at the B.R.I., such as laryngectomy, external ethmoidectomy or antral carcinoma, I had to bring all my own equipment to the hospital for this purpose. Now, of course, you will find a plentiful supply of this type of apparatus in every theatre. It soon became apparent that the smoothness of the anaesthesia obtained by the inhalation endotracheal technique with its perfect airway from trachea to mouth made it very suitable for many types of operation from thyroidectomy to abdominal cases, and also for cases where the prone or lateral positions were required.

So, the position at the outbreak of the second World War was that intravenous barbiturates, spinal analgesia and endotracheal anaesthesia had become normal everyday procedures. Closed circuit anaesthesia with cyclopropane was also becoming

popular, and during the early part of the war, trichlorethylene (Trilene) was also introduced. The introduction of the latter was interesting. This chemical was being largely used in the commercial cleaning of clothes, and a number of cases were cropping up where the operators were found lying unconscious on the floor. Recovery always appeared to be complete, which indicated complete reversibility, and so some bright lad thought this might be an additional drug for use in aneasthesia. The great advantage of Trilene is its non-inflammability, particularly at the present time when diathermy is almost universally used for haemostasis.

THE "RELAXANTS"

In my opinoin, one of the greatest advances in anaesthesia was the introduction in 1942 of curare by Griffiths and Johnson of Montreal. Since then, drugs other than curare having a similar action have been introduced, and these are now usually called "relaxants".

By the intravenous route, the action of these drugs is to produce a paralytic effect on the voluntary muscles at the site of the nerve-muscle junction, which for the abdominal surgeon presents the same perfect operative field as spinal analgesia does, but without the risks inherent in invasion of the thecal canal. The anaesthesia may, and indeed should be very light, for herein lies the great advantage of the technique. Previously profound relaxation of the abdominal muscles with general anaesthesia could only be obtained by soaking the patient with ether and chloroform, but now only the lightest level of the third stage of anaesthesia is necessary, and some anaesthetists consider that only the second stage is required, providing complete flaccidity with the relaxant is assured.

We were fortunate here in Bristol in being early in the fleld in the use of curare before the war ended, because supplies of curare in this country were extremely limited, and a small amount was allowed to the few hospitals which commenced using it in the early stages. At that time, the only literature consisted of Griffiths' original articles, and we had to feel our way cautiously. Now, of course, an incredible mass of literature has been published on the theory and mode of action of the various types of relaxant. I should point out that in producing this flaccid condition of the abdominal muscles, the respiratory muscles also share in the paralytic phenomenon, and so it is a *sine qua non*, that adequate artificial respiration must be maintained as long as the paralysis continues. This is where Magill's endotracheal technique has proved an invaluable complement, particularly using the tube with an inflatable cuff, which provides a gas-tight joint in the trachea, and so gives the anaesthetist complete control of respiration.

RECENT ADVANCES IN ANAESTHESIA

Amongst other innovations, I should mention hypothermia, refrigeration or artificial hibernation as it is variously called. For many years now there has been a desultory practice of local refrigeration, usually for amputation of leg in cases of gangrene. Nowadays, I would say that it is chiefly used for the purpose of demonstrating the method as such, but cannot be described as a normal everyday practice.

Complete cooling of the whole body to temperatures several degrees below normal is a practice beset with problems, and the knowledge of the profound physiological sequelae is still limited. Briefly, the cooled cells demand very much less oxygen for survival, and so, in certain cardiac and aortic operations, where the systemic circulation may be stopped for short periods, this lessened demand for oxygen may be of value. I would say that these particular cases are the only ones where this extremely complicated technique may be justified.

Induced hypotension is another procedure which is of great value in certain selected types of operation, for instance, where blood loss is likely to be excessive at the normal blood-pressure, or where slight oozing may obscure perfect vision as in the microscopic stage of the fenestration operation. Arfonad, the drug which is most generally used for

this purpose, is usually administered by a drip, and gives minute-to-minute control of the blood-pressure, very frequent readings of which have to be taken throughout the operation.

New drugs are constantly being introduced, and I have not attempted to cover the whole range of complementary cocktails composed of " tranquillizer" drugs such as pethidine, largactil and others, but I have endeavoured to give a brief outline of the drugs and methods which have become the accepted practice.

TRAVELS AND ADVENTURES

May I now give one or two amusing episodes which I have experienced?

Many years ago, before the last war, I was asked by a young surgeon to anaesthetize a very important industrial magnate. The condition was acute appendicitis, and pre-medication was with morphia and atropine. Induction was nitrous oxide and ether, and operation and convalescence were uneventful. Years later, I went to live next door to this magnate; you will understand that this was before the days of the N.H.S.; I live in a much smaller house now. Speaking to him one day, over the fence, he reminded me of the occasion of his operation, and told me that his last recollection before losing consciousness was hearing the surgeon say: "Thank heavens, Brad, this case has come along, I haven't seen a private case for a fortnight."

One foggy night, during the war, Mr. Cooke asked me to go with him to a cottage hospital in the country to deal with an alleged acute abdomen. So I packed my apparatus into his car, and off we set. After a very difficult journey through the black-out in addition to the fog, we arrived at the hospital. Was Mr. Cooke pleased when he saw the patient and diagnosed the case as acute alcoholism? The doctor and matron were very apologetic and placated us with bacon and eggs. However, our adventures were not over, for on the return journey we had to pass an aerodrome and, to add insult to injury, we were stopped by the guards and police who loomed out of the fog and nearly shut us up in the guard-room. It appears they were on the look-out for a similar car to Mr. Cooke's, and they appeared to be particularly suspicious of my anaesthetic apparatus, which at that time was packed in a sinister-looking black wooden box. Fortunately for us, however, word had just come through to say that the wanted car had been apprehended.

In 1948, I was privileged, at the kind invitation of Mr. Tasker, to accompany his surgical club, the Surgical Travellers, on a visit to Amsterdam and Utrecht. I was very interested to see the anaesthetic set-up there, at that time. It appeared that the Emeritus Professor of Surgery, Professor Nordenbos had recently visited London and was intensely interested in the progress made in cardiac surgery, and was anxious that his department should also enter the field. However, he realized that anaesthesia in his country did not fulfil the exacting requirements of cardiac surgery. So he had got into conversation with the young lady who was anaesthetizing one of these cardiac cases, and found that her name was Mrs. Vermeulen-Cranch, and that her husband was a Dutchman, living in Amsterdam, where she was hoping to join him as accommodation, which was very scarce, could be found. Professor Nordenbos saw this was a golden opportunity and certainly let no grass grow under his feet. This was on a Friday, and on the following Monday Mrs. Vermeulen was in Amsterdam, installed in a flat and appointed to the staff of the hospital. Other Dutch surgeons visiting Amsterdam saw some of this epoch-making cardiac surgery, and realizing the important part that anaesthesia took, inquired if they could send their assistants along for a week or two, to learn a bit about it, having, you see, no conception of the implications and responsibilities of modern anaesthesia. Dr. Vermeulin rightly pointed out that this was quite impossible, but that, if the University would arrange for them to attend the University and Hospital for a period of two years on a full-time course, she would undertake their tuition. And, so when I was there in 1948, she had six Dutch graduates learning the specialty of anaesthesia. On visiting Utrecht, I found a young English anaesthetist there, Dr. Roberts, who also had six Dutch trainees. Previous to Dr.

Roberts's arrival, Mrs. Vermeulen used to travel to Utrecht as well, to administer and teach anaesthetics, but the work grew to such an extent that she could not cope with it all, and had to confine her activities to Amsterdam. At that time the Dutch were full of admiration for the wonderful English anaesthesia as they called it. I have no doubt that, by now, they call it their Dutch anaesthesia.

You may have noticed I called this lady Mrs. Vermeulen and sometimes Mrs. Vermeulen-Cranch. Her maiden name was Miss Cranch, and she was a Cardiff graduate. It appears to be a custom in Holland for the wife to tack her maiden name on the end of her husband's surname.

GROWTH OF ANAESTHETICS AS A SPECIALTY

Well, ladies and gentlemen, during the past thirty years, we have certainly advanced from the old rag-and-bottle methods, and although these various developments seemed, at the time, to appear at fairly leisurely intervals, now, in retrospect, the impression on my mind is kaleidoscopic, and it is quite certain that much of the major operative surgery of today could not be undertaken if surgery and anaesthesia had not advanced hand-in-hand.

In the early 'twenties, textbooks on anaesthesia were few in number; now we have an extensive library. The oldest Society is that of England, known as the Society of Anaesthetists. It began in 1893, and went on until 1908, when it became the Section of Anaesthesia of the R.S.M. It was about 1906 or 1907 that many medical bodies united to form the single R.S.M. The Society of Anaesthetists published *Transactions*, small booklets you could put in your pocket, between 1898 and 1908. The Association of Anaesthetists of Great Britain and Ireland was founded in 1932 with Dr. Harry Featherstone as the President. It publishes *Anaesthesia* which began publication in 1946. The American Society of Anaesthesiology was founded in Brooklyn, New York in 1905, and publishes *Anaesthesiology* which began in 1940. The *British Journal of Anaesthesia* started in 1923. There is a World Federation of Societies of Anaesthetists with a membership of forty-two national societies.

An important step in the development of anaesthesia was the creation of the Chair of Anaesthesia at Oxford in 1936. At this time, Lord Nuffield had offered £1¼ million for the endownment of a Medical School Trust, including the establishment of five Chairs including one in anaesthesia. He had just announced that he had decided to increase his endowment to a round £2 million. Some doubt was expressed whether anaesthesia was really a subject for a chair but Nuffield, who had personal experience of anaesthesia, both skilfully and unskilfully administered, persisted in his viewpoint that it would benefit from a Professor who could devote himself to its advancement through teaching and research. Sir Farquhar Buzzard was then Regius Professor of Medicine, and I quote from Nuffield's biography. "He remembers walking up and down with Buzzard arguing, and finally making it clear that he felt so strongly about it that his backing of the whole scheme would be in doubt." In this way, Oxford got the first chair in anaesthetics in the British Empire: others have followed since then, and the specialty has benefited by its progress being sustained at the highest academic levels. How right Lord Nuffield was, and how fortunate in the election of the first holder of the Chair, Professor Macintosh, now Sir Robert Macintosh, who has proved himself a veritable ambassador of anaesthesia.

The D.A. of the R.C.S. was instituted in 1935. The Faculty of Anaesthetists of the R.C.S. was created in 1948 and the higher diploma of F.F.A.R.C.S. inaugurated, which has a primary and final examinations.

The modern anaesthetist must be a sound clinician, whose opinion is valued in assessing the anaesthetic risks of operation. He has to have a sound knowledge of the basic sciences, to have knowledge of a large number of pharmacological preparations, and to know how to use them with safety. He must have a working knowledge of the mechanics of the apparatus he uses, and a more intimate knowledge of the effect of gases and relative pressures and their effects on the chemistry of the blood and tissues.

He must have a useful pair of hands, for he has to use endoscopes with precision and without trauma; he has to be capable of setting up intravenous drips of various types with speed at short notice. Last but not least, he must have a kind and sympathetic approach to the patient.

We have been accused, ladies and gentlemen, of making anaesthesia a "closed shop". The sole object, I can assure you, in raising the standard of administration of anaesthetics, and this inevitably entails a long and arduous apprenticeship, is to ensure for you and yours and the public in general, safety and comfort during surgical operations, and conditions under which the surgeon is able to give of his best. I, personally, wish to banish the day when administration of an anaesthetic is a hazardous, uncharted adventure into the unknown, both for the patient and the doctor, but welcome the time when, should the emergency arise, we can be admitted to any hospital in the country, with complete confidence that the anaesthetic will be administered, not by anyone at hand willing to have a bash, but by a properly-trained anaesthetist, with all that this implies, and so truly uphold the motto of the Association of Anaesthetists, "In somno securitas".

THE PORT HEALTH SERVICE

BY

DR. D. T. RICHARDS
Senior Port Medical Officer, Bristol

" It is better to travel hopefully than to arrive . . . " R.L.S.

I

THE DEVELOPMENT OF PORT HEALTH LEGISLATION

The Port Health Service, serving both sea and air ports, is administered centrally by a section of the Ministry of Health and locally by the Port Health Authority. It is a service which receives little publicity. In fact, it is only when a case of smallpox, for example, is discovered or overlooked at one of our sea or air ports that the public hears of the existence of Port Health Departments.

The development of the Port Health Service is closely linked with the romantic story of shipping and seamen. The Adriatic Republic of Ragusa first introduced a system of maritime quarantine in 1377. Seafarers suspected to be suffering from plague were isolated for 30 days at a place "distant from the harbour". This was a time when bubonic plague was devastating Europe. History associates Venice with the 40-day period, or quarantenaria, which, partly for astrological reasons, became accepted as the usual period of isolation for suspected seamen and seaborn merchandise.

Since the introduction of quarantine in the fourteenth century each civilized maritime nation, in turn, introduced such a system. These national quarantine regulations probably minimized, even if they could not entirely prevent, the entry of infectious diseases.

The first English quarantine regulations were drawn up in 1663 and provided for the isolation of suspected ships and their crews for 40 days in the Thames estuary. This did not, however, suffice to prevent the Great Plague of London which caused the loss of 70,000 lives from a population numerically smaller than that of present day Bristol.

By the nineteenth century then was a large vested interest in quarantine measures and the associated lazar-houses. Quarantine procedures in each country, and sometimes from port to port in the same country, lacked uniformity. They were arbitrary, often haphazard and extremely irksome and costly to trade and travel. The restrictions, delays and hardships experienced by the eighteenth-century traveller are graphically described in the memoirs of Rousseau and John Howard.

England, during this period was fast becoming the world's leading maritime nation. The practice of preventive medicine made long sea voyages possible and, by controlling such diseases as scurvy, opened up the world to our ships. John Woodall (1569—1643), an Elizabethan surgeon in the service of the East India Company, is credited with the discovery of lime or lemon juice as a cure for scurvy long before James Lind's treatise on the subject in 1753. Woodall recommended "the juice of vegetables and fruits, and when none can be had, oil of vitreol."

During Capt. Cook's expedition of 1772–75 a medical officer visited his ships entering Table Bay at Cape of Good Hope and inquired into the health of his crews, being specially interested in smallpox. This must be one of the earliest port medical officer appointments. Cook's remarkable success in maintaining his seamen in good health and free from scurvy was attributed by himself to an insistence on cleanliness, ventilation, fresh water and fresh provisions, both animal and vegetable.

In the early nineteenth century new influences were at work. First, then was the rapid expansion of international trade coincidental with the Industrial Revolution. Our diminishing agriculture created a need for more imported food. Communications were speeded by the invention of steamships and railways (1810–1830). Thus, our maritime trading interests became much less tolerant of the losses and delays enforced in the name of quarantine in the world's ports. Increasing diplomatic pressure was exerted to abolish quarantine or render the measure more stable and uniform.

Secondly, the spread of Cholera from India to Russia, Europe and the United States of America increased the fear of imported epidemics but showed that the quarantine measures then in force were powerless to prevent the dissimination of cholera. It was realized that Cholera entered equally easily the closed ports of Greece and the open ports of Britain (Woolf, 1916).

Next, many authorities were proclaiming that disease was never transmitted by contagion but by cosmo-telluric influences coupled with accumulations of dirt and filth and that the proper defence against epidemics was sanitation, not quarantine. Koch did not discover the *vibrio Cholerae* until 1884 and there was no agreement before then within the medical profession as to how Cholera was contracted or could be prevented.

Finally, the harsh restrictions on ships coming from infected countries led to attempts at corrupt evasion such as the production of fraudulent Bills of Health. Epidemic outbreaks were concealed in order to avoid retaliatory measures.

Clearly the moment for international discussion and action had arrived. It was necessary that some degree of uniformity should be secured, particularly for such diseases as cholera, plague and yellow fever.

British opinion was anti-quarantine. The real argument against quarantine was put by Simon (1868) and has often been quoted: "A quarantine which is inaffective is a mere irrational derangement of Commerce, and a quarantine of the kind which ensures success is more easily imagined than realized. . . . The conditions which have to be fulfilled are conditions of national seclusion."

The first International Sanitary Congress was held in Paris in 1851. Twelve maritime nations were represented. The object of the negotiations was to reach agreement on preventive measures against cholera, plague and yellow fever, especially in the Mediterranean shipping zone. A measure of agreement was reached; the principle of quarantine was retained; international rules were drawn up providing uniformity in quarantine procedure; maximum and minimum quarantine periods were prescribed; lazarettes were henceforth to be hospitals rather than prisons; a restriction was to be enforced upon quarantine dues, which were in future to be uniform and not to be regarded as a source of revenue.

Thereafter a number of international sanitary conferences were held in order to bring into force effective preventive measures in the light of current advances in epidemiology. The last major conference took place in Paris in 1926 and on this occasion procedure was agreed which, very largely forms the basis of modern port health legislation. This 1926 Convention introduced a system for the control of typhus and smallpox, provisions were made for an improvement in the method of epidemiological reporting, and an international system for the control of rat infestation in ships was established.

These conventions were diplomatic instruments subject to formal ratification by signatory states. They were imperfect because even in questions concerning which international agreement was reached this agreement was sometimes withdrawn, and ratification was invariably delayed for years.

By the end of World War II it became apparent that the existing arrangements, together with the cumbersome diplomatic procedure involved, were unsatisfactory. Various countries had widely differing sanitary codes, and uniformity was still lacking.

The World Health Organization (1946), brought a new approach to the control of internationally transmissible diseases. W.H.O. is a specialized agency of the United

Nations Organisation, and in order to keep its work as free as possible from political influences, it is largely autonomous in matters of administration and finance.

In July, 1946, the Constitution of W.H.O. was drawn up and it was recognized that one of the essential functions of the organization would be "to propose conventions, agreements and regulations and to make recommendations with respect to international health matters." Article 21 of the Constitution gives to the Health Assembly of W.H.O. "Authority to adopt regulations concerning sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease."

An important feature of the Constitution of this Organization is that International Sanitary Regulations *automatically* come into force for all members states after their adoption by World Health Assembly. They no longer have to await ratification.

The idea of such a Health Agency is not a new one. It was originally advocated at a Conference in 1874 and created at the Rome Convention in 1907 when the Office Internationale d'Hygiene Publique was set up in Paris. But until the advent of World Health Organization international health control was based mainly upon time-worn principles involving merely the erection of sanitary barriers. "Implicit in all these strivings towards the foundation of an international health agency was not a wish for the general betterment of the health of the world, but the desire to protect certain favoured (especially European) nations from contamination by their less favoured (especially Eastern) fellows. Half a century later the Constitution of the World Health Organization is a measure of the tremendous moral evolution which has made it impossible to accept as part of the national order the existence of preventable disease and suffering over a large part of the habitable globe." (Howard-Jones, 1950.)

II

PORT HEALTH CONTROL—VESSELS ARRIVING

There are some 62 Port Health Authorities in England and Wales operating the International Sanitary Regulations. These Regulations, the outcome of three years' study and discussion by an Expert Committee, were adopted by the World Health Assembly in October, 1952 and became binding on all member States of World Health Organization. Their object is ". . . to permit countries to take reasonable measures of protection against invasion by epidemic disease, while at the same time protecting commerce and traffic between countries from excessive and often panic measures tending to interfere seriously with international trade movement." (M. T. Morgan, 1952.)

Under these Regulations the captain of a ship which arrives from a foreign port is required to ascertain the state of health of all on board and to sign a "Maritime Declaration of Health". If the answers to the questions in the Declaration of Health are unsatisfactory, the ship is boarded by a Medical Officer before pratique is granted. It is still the duty of H.M. Customs to ascertain which ships require medical inspection and it is the officers of H.M. Customs and not the officers of the Port Health Authority who issue pratique, that is, permission for a ship to have free communication with the shore.

The master of a ship which has had on board during its voyage a case, or suspected case, of infectious disease or upon which there are other similar circumstances requiring the attention of the Medical Officer, must fly the flag signal "LIM" meaning "I require the Port Medical Officer". This signal replaces the old signal "QQ" and "QL" ("My ship is suspect" and "My ship is infected"), and suits the circumstances for which "QQ". "QL" were intended, but has the additional advantage that it can be used in other circumstances requiring the boarding of a ship by a Port Medical Officer. Between sunset and sunrise the signal "LIM" must be flashed in the Morse Code by lamp.

In other cases (i.e. when infectious disease is not suspected), if the ship arrives from a foreign port and is not engaged in regular packet-boat and excursion traffic with a port in France, Belgium or Holland, the flag signal "Q" is hoisted, or flashed in Morse Code. The "Q" signal, a single yellow flag, is a request for pratique.

These signals must continue to be shown until the ship is free from control, i.e. when a ship has been boarded, and cleared by the Port Medical Officer or the Customs Officer.

The flying of signals is not to be regarded as the discharge of the master's duties. Under the regulations he has still to prevent unauthorized persons from boarding his ship until it is freed from control. No person other than the officers of H.M. Customs and Immigration, the Pilot, or a member of the Port Health Staff may board a ship until it is freed from control, without the permission of the Port Medical Officer.

In consequence of an agreement reached between the Brussels Treaty Powers, certain continental ports are regarded as "Excepted Ports", and under normal circumstances ships arriving from these ports are exempt from certain of the requirements of these regulations. "Excepted Ports" are ports situated on the Atlantic coast of France, the coast of Belgium and of Holland.

A list of infected ports is kept up to date at the Port Health Office for the information and guidance of all concerned. For this purpose the port medical staff have available to them the excellent intelligence service of World Health Organization, The existence of the so-called quarantinable diseases at sea and air ports in every country is broadcast daily over a world-wide network from Geneva. This is digested and made available in a most accessible form in the Ministry of Health's Weekly Bulletin, which is forwarded to all Port Health Authorities.

In the regulations a distinction is drawn between "infectious diseases" and "quarantinable diseases". The former are defined as any infectious or contagious disease but do not include tuberculosis or the venereal diseases. The quarantinable diseases (sometimes referred to as the "Convention diseases") are cholera, typhus, plague, yellow fever, smallpox and relapsing fever.

Power is given to the Medical Officer to detain and examine any person suspected as suffering from an infectious disease or who has been exposed to infection. The patient may be removed to hospital and his clothing and effects disinfected. But in the event of the arrival of one of the "quarantinable diseases" certain additional measures are prescribed for the protection of the port. In all cases these are maximum measures and may not be exceeded; thus, in the case of smallpox the vaccination of all passengers and the entire ships' company may be carried out; surveillance, which does not unduly restrict the liberty of a contact, may be imposed for an appropriate period, or, when justified, the isolation of a suspect or a close contact may be insisted upon. The disinfection of water tanks and of dejecta before discharge from the ship must be carried out in the case of cholera; ship fumigation is essential when plague-infected rats are discovered; delousing must be undertaken when typhus occurs. Mails may in no circumstances be detained, disinfected or destroyed.

III

PORT HEALTH CONTROL—VESSELS IN DOCK

The routine inspection of all ships in port is an important phase of the work of the Port Health Inspectorate. The following matters receive special attention:

(*a*) Supervision of the living accommodation on ships; that is, the hygiene of crews' quarters. Immense improvements have taken place in the situation, type and condition of crews' quarters in recent years. "Slums at sea" are gradually disappearing and are being replaced by more commodious and comfortable cabins amidships. In this matter, Port Health Authorities and their Associations have played an important

part, but there is still the need to educate some of the seamen to appreciate and make the best use of improved conditions.

Standards of accommodation which will make the seamen's life healthier and more comfortable have been laid down in the Merchant Shipping (Crew Accommodation) Regulations, 1953. These Regulations give effect, in this country, to recommendations made at the Seattle International Maritime Conference (1946), and regulate the size of berths, the amount of sleeping space per man, the maximum number of men per cabin, the number of baths and washbasins, heating, lighting and ventilation, messing and recreational facilities. But it must be pointed out that for many years, prior to the issue of these Regulations, a great number of leading British shipowners, with the health and well being of their crews in mind had already introduced considerable reforms. Often these were in advance of present statutory requirements, single-berth accommodation, for example, has featured for many years on the drawing boards of British marine architects.

(*b*) The inspection of ships for sanitary defects of original construction, for defects due to wear and tear and for the existence of nuisances.

(*c*) The inspection of imported foodstuffs. All food cargoes are subject to inspection by officers of the Port Health Department. Meat or meat products when imported into this country must bear what is known as an "Official Certificate"; that is, a certificate which testifies to the fact that the meat or meat product was, before importation, examined by a competent authority in the country of origin, and that it has been passed in accordance with criteria satisfactory to the Minister, and that all necessary precautions for the prevention of danger to public health were taken in the preparation and packing of the meat product. In the absence of this certificate, or should details on the certificate be absent or incorrectly filled in, the cargo is inadmissible and is liable to be re-exported.

(*d*) The chemical and bacteriological examination of ships water supplies. Samples of water from water boats and hydrants are regularly taken for analysis. Samples of water from ships in port are also submitted for examination, sometimes as the result of the occurrence of sickness on board, or following complaints from members of the crew or Seamens' Union officials.

(*e*) In addition to the staff of Medical Officers, port health inspectors and clerical staff, the Port Health Authority employs rodent operators whose duty it is to inspect ships for rat infestation and to initiate measures for the control of the rat population on ships. In the past the discovery of swarms of rats when a ship's hatches were uncovered was not unusual. Today a thorough search in a large cargo ship seldom reveals more than a dozen rats and the majority of modern ships are so maintained that they are almost rat-free. At one time the annual figure for rats recovered from vessels in the Port of Bristol was numbered in thousands; nowadays this figure is usually well below 500. This important step forward is partly the result of rat-proofing in ships of modern design, which has been said to create for the rat "a housing shortage, a water shortage and a high rate of infantile mortality"; but mainly it is the result of international legislation which, during the past 30 years, has prescribed that every foreign-going vessel must carry a valid "International Deratting Certificate" or "Deratting Exemption Certificate", whichever is appropriate, both of these certificates being valid for a period of six months, at the end of which time the vessel is subject to re-inspection and possibly fumigation with hydrogen cyanide or some other suitable rodenticide.

IV

DISCUSSION

The United Kingdom is an extremely busy terminal for traffic arriving from countries in which the quarantinable diseases are of major importance. The traffic entering Bristol, which is a leading port so far as this country's trade is concerned, is no exception, goods from every country in the world being off-loaded at the quays of Avonmouth, Bristol City and Portishead Docks.

One of the primary duties of the Port Medical Officer is to assess the risk of importation of one of the quarantinable diseases into his area. In this he is guided by several factors. He is aware of the normal service to and from his seaport, connecting it with designated ports of the world. He is aware of the frequency of arrival of ships not on normal service. He is aware of the last day of report of a quarantinable disease at a foreign port—from which traffic is certain or likely to arrive at his own port. He has the further knowledge of the incubation periods of the "convention diseases" and of their most likely method of spread.

What is this risk?

Plague is an epizootic of certain rodent species, particularly of the black or ship rat. and in epizootic prevalences the disease tends to "spill over" into the human population. The vector is the rat flea. Sample rats are therefore regularly examined at the laboratories of the major ports. In the Port of Bristol fifty per cent. of the rats destroyed on ships in dock are submitted to the bacteriologist for an opinion. This precaution is worthwhile.

Neither rodent nor human plague has occurred in this country for many years, yet one must always keep in mind the experiences of Bristol during the First World War, when two cases of bubonic plague appeared as out-patients at the Bristol Royal Infirmary. Fortunately they were recognized, and plague-infected rats, which could only have entered the city via the port, were recovered from a rag and bone merchant's premises in the centre of the city, where the men worked. Such an incident leaves an indelible impression on the Port Health Services. The last occasion that an isolated case of clinical plague occurred on a vessel in Bristol was in 1932.

It is probably true to say that, provided our existing health services maintain their efficiency, the danger of the spread of human plague in Britain is not great; but the possibility of importation of this disease cannot be discounted.

Cholera is a disease of extreme rarity in this country. The classical method of spread is by the pullution of unpurified water supplies. The areas of endemic prevalence of this disease are geographically restricted. Is there a serious risk of the importation of cholera into this country through a sea port, and, if this should happen, what is the assessment of the danger of its spread in epidemic fashion? The clinical features of cholera are of such rapid development and dramatic intensity that, with our existing services, the risk of this disease being overlooked and allowed to enter the country at one of the ports is a small one; and the danger of its spread is, in fact, negligible.

Louse-born typhus has only occasionally been imported in recent years, and the human patient, once deloused is non-infectious. Now and again a person infested with lice is discovered at the port or in its vicinity, and the importation of typhus must always be regarded as a possibility. The high efficiency and ease of application of modern insecticides, however, provides the port health staff with an effective method of control over this disease, rendering the danger of its spread within our community very improbable.

There is no chance of spread of yellow fever, even in the unlikely event of the arrival of a fully established case at the port.

Smallpox, a disease feared and respected by every Port Medical Officer, is the outstanding danger in Port Health control. To some extent the Medical Officer is protected by the inevitable length of time which ships take to reach this country from endemic areas. The disease is widely distributed and highly infectious. It exists in countries with which the United Kingdom has a large volume of regular and occasional trade. It has been imported into the United Kingdom quite regularly over many years. An individual can obtain immunity to it through vaccination but the solidity of that immunity falls off with the passage of time, and a degree of immunity to smallpox in a person who has resisted several attempts at re-vaccination is a matter for conjecture.

To prevent the importation of smallpox and to help in limiting its spread, should

importation be inevitable, makes the utmost demands on the skill and judgement of the port medical staff.

Having boarded a ship, the Medical Officer is guided by the Maritime Declaration of Health; he is aware of epidemic conditions prevailing at the previous ports of call; he has access to the medical log-book kept by the captain, and certain personal documents of origin and health may be submitted to him. But not even the most careful examination of documents, followed by medical examination, will identify the traveller who is incubating smallpox.

It is essential that the traveller should give every co-operation. This was made very clear on the occasion of the Brighton outbreak (1951). The primary case occurred in a patient who arrived in the United Kingdom from Pakistan and who felt ill within 24 hours of arrival, developing a rash not long afterwards. The patient did not seek medical advice. The consequences were serious.

But given the patients' co-operation smallpox is sometimes no easier to bring under control. Two recent outbreaks in Scotland emphasize this point. The first was in Glasgow in 1941 where the primary case had sickened on shipboard with clinical appearances leading to a provisional diagnosis of measles. The second instance, again at Glasgow, was in 1950, where the primary case sickened a few days after disembarkation at London, was admitted to a Glasgow Hospital, and presented all the clinical features of varicella. This is no reflection on the competence of those who made the diagnosis on the clinical appearances of these two patients. The consequences of a mistaken diagnosis in the case of smallpox can be so disastrous that one should constantly keep in mind the immense help which can be given by the laboratory examination of material derived from a patient, even in the earliest stages and even with the most misleading clinical picture. The characteristic features of small pox can be greatly modified by successful vaccination, particularly during the period when solid immunity is lost but partial immunity persists. In these circumstances the value of laboratory confirmation becomes relatively much greater.

Our dangers from the so-called quarantinable diseases are, to a large extent, the danger of the importation and spread of smallpox, and to a lesser degree the danger of the importation of typhus.

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THE SYMPTOMS AND TREATMENT OF ACUTE FOLLICULAR TONSILLITIS

BY

S. G. FLAVELL MATTS, M.B. (B'HAM), M.R.C.S.

Resident Medical Officer Royal Devon and Exeter Hospital

Acute follicular tonsillitis is quite common and rarely justifies admission to hospital. Perhaps for this reason its treatment differs widely from one doctor to another. It seems still quite common practice to use sulphonamides, in spite of the work of Landsman, Grist, Black, McFarlane, Blair and Anderson[1] and Macdonald and Watson,[2] who showed that sulphonamides were not effective in the treatment of streptococcal tonsillitis. Denny, Wannamaker, Hahn[3] gave 600,000 units of procaine penicillin daily for 5 days and concluded that it relieved the sore throat and headache, but had no effect on chilliness. Penicillin is also beneficial in the prevention of recurrences in people who have already had rheumatic fever (Massell, Sturgis, Knobloch, Streeper, Hall, and Norcross).[4]

However it seems important to know if the routine use of either penicillin or sulphonamides is justified in the ordinary uncomplicated case, in the absence of a history of rheumatic fever, and it was to this end that this small but carefully controlled series was studied.

PATIENTS

In all sixty patients were studied. They were all serving airmen who had been examined on entry into the R.A.F. and no evidence of chronic E.N.T. disease had been discovered. Their ages ranged from 18–45 years.

All patients were admitted to the station Sick Quarters ward, all were seen and followed up and assessed once or twice daily. Clinical methods were used to pronounce the patient "cured" and in all cases symptoms and signs had to have resolved before the patient was so considered. The patients were not allowed to leave before cured and no patient was informed what treatment he was receiving. There were no bacteriological investigations.

All cases were typical of the picture of acute follicular tonsillitis, the appearances being as follows:

The tonsils were enlarged, reddened, oedematous, with the tonsillar crypts filled with yellowish or greyish exudate giving the tonsils the appearance of being covered with specks; sometimes this progressed later to a continuous exudate covering most of the tonsils. The pharynx was always inflamed to a certain extent and some degree of cervical adenitis invariable.

In addition some, or all, of the following symptoms were present: general malaise, headache, sore throat, dysphagia of varying severity, aches and pains in other parts of the body, severe continuous pain in the throat, shivering, nausea, extreme weakness, foetor of breath, dizziness.

Of the 60 cases 92 per cent. presented with some fever and in 64 per cent. it was above 100° F.

About one half of the patients said they had had a previous attack of tonsillitis. Only 12 per cent. knew of any possible source of infection.

Table 1 shows the relative frequency of these presenting symptoms expressed as percentages.

TABLE I

PRESENTING SYMPTOMS IN SIXTY PATIENTS WITH TONSILLITIS

Presenting Symptom	Percentage of all cases in which present
Sore Throat	84 per cent.
Dysphagia	66 ,, ,,
Headache	56 ,, ,,
Extreme Weakness	8 ,, ,,
General Malaise	56 ,, ,,
Shivering	24 ,, ,,
Nausea	6 ,, ,,
Pains and Aches in back, limbs or joints.	12 ,, ,,
Aching and Swelling in neck	8 ,, ,,
Dizziness	8 ,, ,,
Black out or Fainting	4 ,, ,,

The treatment was determined by selection of alternate cases.

All patients were given the following "symptomatic" treatment: Tabs. cod. co 2, six hourly. Warm gargles of pot. chlor. and phenol, q.d.s. They were given a light diet and increased fluids.

In addition there was added in those cases that happened to be selected either: sulphamezathine 6–8g. daily in 4-hourly doses—penicillin distaquaine 600,000 units b.d. by I.M. injection, or a combination of the two.

One patient developed a penicillin rash, three cases having sulphonamides had severe nausea and depression. Three patients were given penicillin lozenges in addition, and one developed severe glossitis and stomatitis, so the use of these was discontinued and these three cases not included in this series. But no side effects in this series were severe enough to warrant stopping treatment.

All were kept in bed until well. In order to overcome the possible effect of people not wanting to return to work, at first most attention was paid to clinical signs in pronouncing the patient well. But in fact little evidence of "shirking" was found, and in all cases symptoms and signs resolved together.

The average time taken for recovery is shown in Table III.

TABLE II

Treatment	Number of cases treated	Average time for recovery
Symptomatic	22	6½ days
Penicillin	16	6½ days
Sulphonamides	14	6½ days
Penicillin and Sulphonamides combined	8	6 days

The effect of the treatment on the principal symptoms and the temperature was also studied as shown in Table II.

TABLE III

Treatment	Average time sore throat and dysphagia lasted	Average time temperature lasted
Symptomatic	5¼ days	3 days
Penicillin	5 days	3 days
Sulphonamides	4¼ days	3½ days
Penicillin and Sulphonamides combined.	4¼ days	2½ days

Complications were few in this small series and are shown in Table IV.

TABLE IV

Complication	*Number of cases developing the complication on:* Symptomatic Treatment	Penicillin	Sulphonamides	Sulphonamide and Penicillin combined
Peritonsillar Abscess	2	0	0	0
Otitis Media	1	1	0	0
Generalized Adenitis	0	0	1	0
Persistent pyrexia with no clinical signs.	0	0	1	0
Persistent Ulcer of Fauces	1	0	0	0
Total number of cases treated	22	16	14	8

The cases of peritonsillar abscess resolved on penicillin without surgery.

Follow-up of these cases six months later showed no gross evidence of chronic tonsillar disease in any case.

DISCUSSION

The aim of this investigation was to see if one was justified in treating cases of acute follicular tonsillitis with antibiotics in the absence of evidence of the nature of the causal organism. No throat swabs or blood counts were done for this reason, and the cases were simply identified as acute follicular tonsillitis and all had similar clinical appearances.

The results here show that little is gained by the indiscriminate use of antibiotics and that the times of recovery of the treated and untreated groups are almost the same.

It has recently been established that a condition exists indistinguishable clinically from the tonsillitis caused by the haemolytic streptococci (Commission on Acute Respiratory diseases 1944).[5] This was named "acute endemic exudative pharyngitis and tonsillitis" and is probably a viral infection by one of the adenoido-pharyngeo-conjunctival (A.P.C.) group. These organisms are insensitive to antibiotics and infection by them would be unaffected by antibiotic treatment.

As most cases of acute follicular tonsillitis are treated in General Practice where routine throat swabs are not taken, it is suggested that treatment with antibiotics in this condition should be withheld unless throat swabs are taken and are organisms positively identified. Patients infected with haemolytic streptococci will clearly benefit from penicillin but other causal agents will be unaffected.

As all cases treated in this series present similar appearances clinically it is put forward as further evidence that the nature of the causal organism cannot be determined other than by further investigation (throat swab). It also appears that many of the cases seen in General Practice will not respond to antibiotics.

SUMMARY AND CONCLUSIONS

Sixty young men with acute follicular tonsillitis were treated symptomatically; some were given sulphonamides, penicillin or both drugs in addition. There was no appreciable difference in the speed of recovery in any of the four groups.

These results indicate that the indiscriminate use of antibiotics in tonsillitis is of little value.

Streptococcal tonsillitis is impossible clinically to distinguish from those cases of tonsillitis which do not respond to antibiotics. It is therefore clearly desirable to take a swab to identify the causal organism. Where this cannot be arranged routine use of antibiotics would be indicated in patients who had previously had an attack of acute rheumatism.

This work was done whilst holding a temporary commission in the R.A.F. and I wish to express my thanks to the Air Ministry for permission to publish this paper.

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ASTROCYTOMA TREATED BY RADIOTHERAPY: DEATH FROM ACUTE LEUKAEMIA

(*A Clinical Pathological Conference of the University of Bristol Medical School*)

CHAIRMAN: PROFESSOR T. F. HEWER

Dr. Sluglett: This is the case of a young girl whom I first saw in November 1952 at the age of six. She was brought in by her mother who said that she had been awake all night with earache. In the morning there was a discharge. She had an acute otitis with a perforated drum on the left side. She was treated with dry mopping and iodoform powder. She was subsequently referred to Mr. Scarff who, in April, removed her tonsils and adenoids. The next time I saw her was in July 1954. She was brought in by her mother who was worried about her squint which had developed recently. She was rather older than the age at which one normally sees squint but I could find no cause for it and she was otherwise perfectly well so I referred her to the Eye Hospital where she was seen by Mr. Brown and later admitted under Dr. Campbell in September.

Mr. Hulme: In the Eye Hospital she was seen by Dr. Campbell and later by Mr. Phillips and it was found that she had bilateral papilloedema and some impairment of vision in the left eye and bilateral external rectus weakness—she had a convergent squint. There was also slight weakness of her right leg. These findings suggested a cerebral tumour and she was transferred to Frenchay Hospital. Here a ventriculogram was performed (Plate III). Both lateral ventricles were found to be considerably dilated, the left being somewhat larger than the right, with deviation of the septum lucidum to the right. Only a little air entered the anterior part of the third ventricle and it was displaced towards the right. This suggested a space-occupying lesion related to the third ventricle and occluding it. This fitted the neurological findings of slight right-sided weakness. A tumour in this situation is likely to be inoperable. The next best thing is to circumvent the obstruction to the flow of cerebro-spinal fluid and treat the lesion with X-ray therapy, without necessarily performing a biopsy. No attempt was made to expose this tumour. A catheter was inserted into the left lateral ventricle and, passing it deep to the bone, was drained into the cisterna magna. This is an operation invented by a Norwegian, Torkildsen, and very valuable in the case of any lesion causing obstruction in the third ventricle or in the aqueduct. She then went to the General Hospital for X-ray therapy and did very well, remaining symptom-free although visual acuity on the left side was very considerably impaired. Her papilloedema subsided and at subsequent examination she showed neither motor weakness nor sensory loss and remained mentally perfectly normal. I saw her from time to time as an out-patient. Both her mother and I were very pleased with her progress. I last saw her on the 12th September, 1956 and she had been completely free of symptoms for the previous year although she now had a right homonymous visual field defect affecting mainly the temporal field of the right eye. It is possible that this may have been present for some time as in the young child it is very difficult to chart the visual fields accurately.

Dr. Sluglett: I saw her again on the 4th November, 1956 when her mother brought her in to my surgery and told me that she had started her periods. She was ten years old then and although this is an early age at which to start menstruation it is occasionally encountered and I suggested that if bleeding did not stop in a day or two we would go into the matter further. As they were about to go through the door her mother said: "By the way Doctor, I would like you to look at her gums and mouth. She is having trouble there." On looking in her mouth I noted the hyperlasia of the

gums so I sent her to her dentist and, as we were both rather worried by the appearance, we sent her to the Dental Hospital. I would emphasize that when I saw her she had no complaint. She appeared perfectly well.

Dr. Apley: My first acquaintance with this girl occurred when I was rung by the Dental Hospital and asked to see her because of an unusual condition of the gums. It had also been noted that there was a haemorrhagic rash on the body and that she had vaginal bleeding. I saw her in out-patients and arranged her immediate admission. It was apparent that the girl's condition was deteriorating with alarming rapidity. She was a big plump girl and, sure enough, she had signs of developing puberty with enlargement of the breasts and pubic and axillary hair. The vaginal bleeding was therefore not so out of the way as it might seem. She showed marked pallor, bleeding hypertrophied gums and some enlarged glands in the neck but not elsewhere and a petechial rash all over her body. The spleen was just palpable. On these findings we decided that this was almost certainly an acute leukaemia. She had the usual investigations done and these confirmed the diagnosis of leukaemia. The haemoglobin level was 60 per cent. Her white count was 140,000/c.m.m. and these cells were all atypical "blast" cells. There were no mature granulocytes.

Within a few hours her condition deteriorated quite markedly and by next day she was comatose. We gave her blood transfusions and also, on empirical grounds, we started her on cortisone. This drug does have a quite good effect in some cases, in others such as this it has no effect whatsoever. She became unresponsive, breathing was difficult and she could not swallow. She was developing signs of some intracranial lesion, her neck was stiff, her temperature was shooting up and she died within 48 hours of admission into hospital.

We were particularly interested in the diagnostic problem of how one could tie this acute leukaemia up with her history of tumour in the brain. Also there was the problem whether there was some connection with the irradiation that she had received.

Prof. Perry: Would a radiodiagnostician or neurosurgeon tell us what importance they attach to the very marked beaten silver appearance of the skull?

Mr. Hulme: Yes, she had evidence of increased intracranial pressure, the marking on the internal tables being due to pressure of the convolutions. There was no separation of the cranial sutures nor was there any evidence of erosion of the base although possibly the posterior clinoid processes are thinned.

Dr. Cosh: Have you a record of the C.S.F. pressure at that time?

Mr. Hulme: She had a lumbar puncture at the Eye Hospital and the pressure was then 300 mm. Hg but with small children this is not very reliable as they struggle and the pressure shoots up and down. It may have been 300 $\pm$100. One must remember that in order to get dilatation of ventricles of that extent there must have been obstruction for some considerable time.

Prof. Hewer: I know the neurosurgeons did not make any exploration of the tumour but have they any feelings as to what sort of a tumour it was?

Mr. Hulme: The most likely would be an infiltrating glioma. The tumour did appear to be to the side of the third ventricle rather than actually in it. It appeared to be arising in one of the basal ganglia and squashing rather than occluding the third ventricle.

Dr. Cates: I do not understand why you decided this was a tumour rather than a chronic abscess or tuberculoma.

Mr. Hulme: I was going on the grounds of probability. An abscess is most likely to be secondary to a middle ear infection and this would be in the temporal lobe which is not the case here.

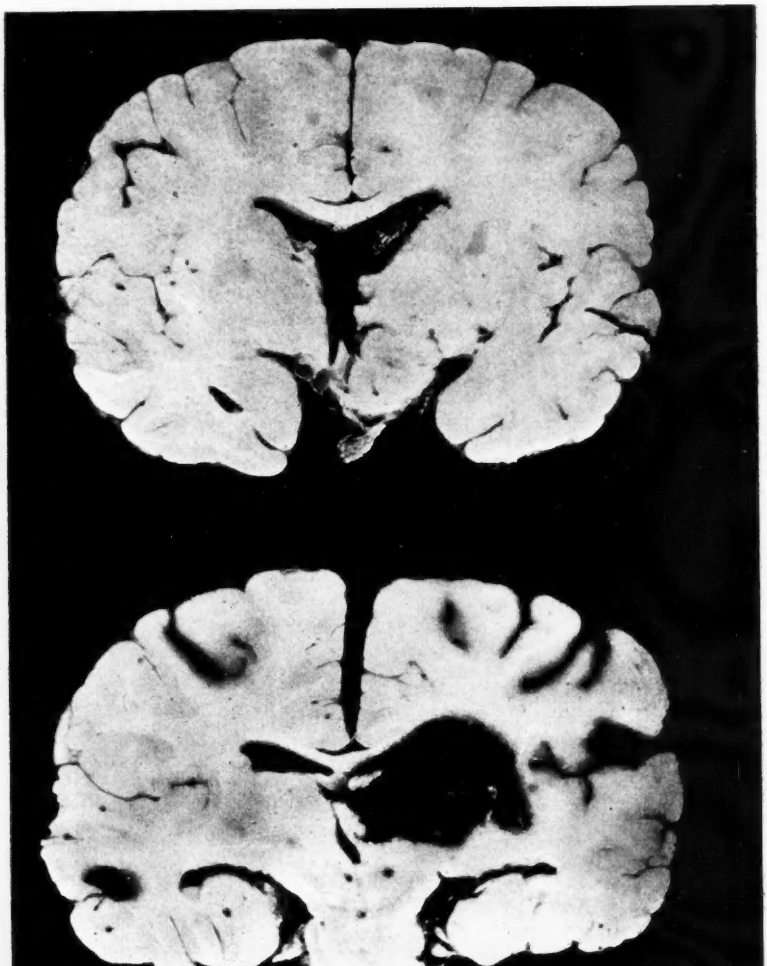
Dr. Apley: Perhaps it is not realized how very common these intracranial tumours are in children. It is said that at least one-seventh of all intracranial tumours occur before the age of ten.

Prof. Perry: Is it not also true that, from Cushing's figures, quite a number of these space-occupying lesions were, as Dr. Cates suggests, inflammatory?

PLATE III

Ventriculogram before by-pass operation shows dilatation of the lateral ventricles and failure of air to enter the third ventricle.

PLATE IV



ABOVE. *Sagittal section of brain at 70 mm. from frontal poles shows compression of the left globus pallidus and left optic tract by tumour in the wall of the third ventricle.*

BELOW. *Sagittal section at 80 mm. from frontal poles shows haemorrhages in the left thalamus and cerebral cortex.*

Mr. Hulme: Well, I do not think that is true of the cases which come to us at Frenchay.

Prof. Hewer: Probably they are very well selected before they come to you.

Prof. Neale: Did the papilloedema improve after the operation?

Mr. Hulme: Yes, it subsided completely. She did have some secondary optic atrophy.

Mr. R. V. Cooke: Does the apparently favourable effect of radiation prove or disprove any of these diagnoses? Is it probable that tumour was more likely in view of the apparently favourable effect of radiotherapy?

Mr. Hulme: The difficulty is that the effect of the relief of obstruction to the C.S.F. is difficult to assess. She might have improved equally without radiotherapy.

Dr. Lloyd: Was the irradiation applied only to the skull or to the spine as well?

Mr. Hulme: As far as I know only to the skull.

Dr. Cates: We now know that you were right and this was a tumour, but at the time had you really cleared up all the diagnostic difficulties before starting deep X-ray treatment?

Mr. Hulme: No, we hadn't. We have seen cases like this before and in trying to get at a tumour in this situation we could do an awful lot of damage. Even with a needle one may damage the basal ganglia.

Prof. Hewer: A needle biopsy would not have been a good thing if it were a tuberculoma either.

Dr. Cates: I don't know about that. You can cure it nowadays with streptomycin and I.N.H. It would be better than giving it radiotherapy.

Dr. Apley: Was a tuberculin test done?

Mr. Hulme: No, in fact it wasn't.

Prof. Perry: To go on to the leukaemia and the haemorrhage manifestations, I thought that in leukaemia the patient developed purpura because he ran out of platelets. Here is a patient developing colossal bleeding with a count of 50,000 platelets/c.mm. I asked Dr. Bolton about this and he said that he didn't think it could happen.

Dr. Bolton: This is, of course, a very low count.

Prof. Neale: What is the experimental error? Plus or minus 50,000! (Laughter.) To take a more clinical point, did this child's bilateral 6th nerve palsy improve as the result of treatment?

Mr. Hulme: I think it did. But of course her diplopia disappeared because of her visual accuity defect in the left eye. When I saw her in March 1955 she had no rectus palsy.

Prof. Hewer: Did the eye signs clear up immediately after the operation? If so, would you not think this was due to the reduction in pressure rather than the radiotherapy?

Mr. Hulme: Yes, it was due to the reduction in pressure. External rectus weakness may occur with any increase in intracranial pressure.

Prof. Hewer: I think we ought to have the post mortem now.

Dr. Johnson: The body was that of a moderately obese girl, fairly tall for her age and, as you have heard, she appeared to be approaching puberty. There was blood exuding from the nose and there was an extensive purpuric rash especially on the lower limbs and on the trunk. There was also a little oedema of the ankles. The brain was swollen with flattening of the cerebral convolutions and there was some blood beneath the pia at the vertex. The catheter inserted into the posterior part of the left lateral ventricle passed through the meninges and ran between the dura and the bone, backwards and down to empty into the cisterna magna. A solid whitish tumour $3{\cdot}5 \times 2{\cdot}5 \times 2{\cdot}5$ cm. extended upwards round the floor and left lateral wall of the third ventricle compressing the left globus pallidus, the left subthalamic nucleus and the left optic tract (Plate IV). An extension of the tumour ($1{\cdot}5$ cm. diameter) in the region of the pituitary stalk pushed forwards the optic chiasma and had

produced enlargement of the hypophyseal fossa and flattening of the pituitary gland. There was also a haemorrhage into the thalamus on the left side distinct from the brain tumour, occluding the lateral ventricle, and smaller haemorrhages into the cortex. The part of the brain adjacent to the tumour showed a moderate gliosis and also the presence of small calcified particles, calcospherites, which are frequently found in the neighbourhood of a slowly-growing brain tumour. The blood vessels in the tumour appeared normal but there were a few small areas of cystic degeneration. The cells of the tumour were astrocytes, some protoplasmic and some fibrillary in varying proportion. Both types of astrocytes produce glial fibrils which pass through the cytoplasm of the cells. This tumour was an astrocytoma. Let us pass on to the leukaemia. The appearance of the gums was quite striking (Plate V). There was haemorrhage and small areas of ulceration on the lower lips and the gums were haemorrhagic and hypertrophied. Histological section showed a very heavy infiltration with leukaemic cells. Petechial haemorrhages were present beneath all the serous membranes, particularly in the epicardium and also in the myocardium but the heart was otherwise normal. The right ovary showed a haemorrhagic cyst, no luteal cells were found histologically and there was no clear evidence that ovulation had occurred. The lungs were oedematous and there was a little fibrin on the pleural surfaces. Distinct areas of haemorrhage and leukaemic infiltration were present. Neither the liver nor the spleen were enlarged. Section of the liver showed a mild degree of diffuse leukaemic infiltration both in the sinusoids and the portal areas. The lymph-nodes were enlarged from heavy leukaemic infiltration of the sinusoids and medulla with compression of the follicles. There was haemorrhage into the lymph-nodes and erythrophagocytosis. The sinusoids contained occasional giant cells. The blood film showed no mature granulocytes at all. There were, however, a very large number of nucleated cells and nearly all of them were atypical "blast" cells with irregular lobulated nuclei. The red marrow had extended all the way up the shaft of the femur. A section showed little except a heavy diffuse infiltration throughout with leukaemic cells. To sum up, this was a girl of ten who had a solid astrocytoma of the cerebrum two years ago for which a successful by-pass operation was performed. She received some radiotherapy and died suddenly from acute leukaemia with leukaemic infiltration in the marrow, the lungs, the lymph nodes and the gums. The terminal events were haemorrhage into the thalamus and acute pulmonary oedema.

Prof. Neale: Do we happen to know the relation of the tumour to the hypothalamus? I ask because of the possibility of neurogenic precocities.

Dr. Johnson: The hypothalamic nucleus on the left side was certainly compressed. It is of interest that when she first attended with her tumour she was described as a lean girl; when she presented subsequently she was obese. I had wondered whether this was a precocious puberty but I was unable to prove it.

Dr. Cates: Dorothy Russell has recently described the very marked changes in the blood vessels of the brain when there has been radiotherapy to a tumour and considers that a lot of destruction can be caused in normal tissue while the tumour is being bombarded. Are you in a position to make any observation on that point here?

Dr. Johnson: I do not think I am. These blood vessels that I have in my sections appear to be the normal blood vessels encountered in normal brain left behind when the astrocytoma has infiltrated round about.

Dr. Cates: Do you think the bleeding in that site might have been determined by radiotherapy?

Dr. Johnson: There was no evidence of it.

Prof. Hewer: Was the haemorrhage not the haemorrhage of leukaemia?

Dr. Johnson: I am sure that it was. The area of haemorrhage was quite apart from the tumour.

Prof. Hewer: One question that comes into our minds is that the leukaemia may have had some relation to the radiotherapy.

Dr. Tudway: First of all dealing with the more general question of radiotherapy.

That was undertaken in this case in the absence of detailed knowledge of what was wrong with the patient except the assumption that there was a glioma. We don't usually like to treat tumours which we know are well-differentiated astrocytomas, which bears on Dr. Cates's question about damage to the brain because it is known that a certain dose will produce damage to blood vessels of the brain and the dose necessary to have a reliable effect on a well-differentiated astrocytoma would be very much the same dose—so there would be no question of trying to destroy the tumour directly. The only effect one might have by analogy with other tumours is to cause the cells to differentiate to a degree where they can no longer reproduce but I think that is a bit theoretical. Had we known this was as differentiated as it was we would not have taken the case on at that stage. However, it was treated on the basis that it might be a more undifferentiated tumour and therefore a wider area was treated than appeared to be necessary from the post mortem and to a fairly low dose, in fact about 3,000 r. This is not a dose which we would expect to have a damaging effect on the normal tissues.

As far as the question of a link between the occurrence of a leukaemia and the radiation goes, there has been a recent publication which appears to demonstrate that if cases of acute leukaemia in children are examined the mothers will have been examined in pregnancy with diagnostic X-ray to the pelvis twice as frequently as in a control group which nearly, but not quite I think, means that acute leukaemia in childhood is twice as likely if the mother has had diagnostic X-ray of the pelvis during pregnancy. Again Court-Browne, working for the M.R.C., has shown that irradiation of ankylosing spondylitis results in an increased leukaemia rate afterwards in these patients, usually adults. The likelihood of acute leukaemia appears to depend entirely on how much irradiation has been given. With the dosage most often used in adults the patients are about ten times as likely to get a leukaemia although of course this does not mean that they are very likely to get a leukaemia but their chances are definitely increased (from about 1 in 20,000 to 1 in 2,000). Americans collecting cases of carcinoma of the thymus found that quite a number had had irradiation of the thymus in infancy. In all these cases the increased risk of tumour formation arises in the part which actually received the irradiation. Let us try to bring this back to this particular case discussed here. If it were likely that it was irradiation of the bone marrow which would determine the onset of the leukaemia there really wasn't a high proportion of bone marrow irradiated. As both brain tumours and leukaemia are both not very uncommon as we see them I should have thought it was most likely in this instance that the leukaemia was fortuitous. This is, of course, only an expression of what I think is the probability and it is impossible to say definitely.

Prof. Perry: Could Dr. Tudway say anything about the true relationship in this case? Experimentally there appears to be a definite relationship between the dose and the period after which the leukaemia appears and I thought this applied in the leukaemias following spondylitis and pelvimetry. We are all very sensitive about this. I have a female patient who before valulotomy four years ago had a lot of X-rays because we wanted to know whether her mitral stenosis was better or not. She now has a myeloid leukaemia. Did we give it to her? This child had a two-year interval.

Dr. Tudway: I think this is rather a short interval but in Loutit's experimental cases he has conditions extremely carefully controlled. In the case of pelvimetry in the women conditions are relatively constant and much the same dose will be given in each case, for much the same reasons, and about the same time in the pregnancy. In this brain tumour only a part of the patient has been treated with a much higher dose. It is impossible to relate these different conditions to the expected time interval.

Dr. Cates: In the atom-bomb leukaemia is it not a fact that, although most of the cases came 7–10 years afterwards, some cases began to appear a year or so after the bomb dropped?

Dr. Tudway: That is so, but not very many straight away. The curve of the incidence began to rise. We are dealing with probabilities.

Prof. Perry: Most of those near enough to the bomb to get a big dose died, however. The survivors who got leukaemia were protected if they were near or only got a reduced dose.

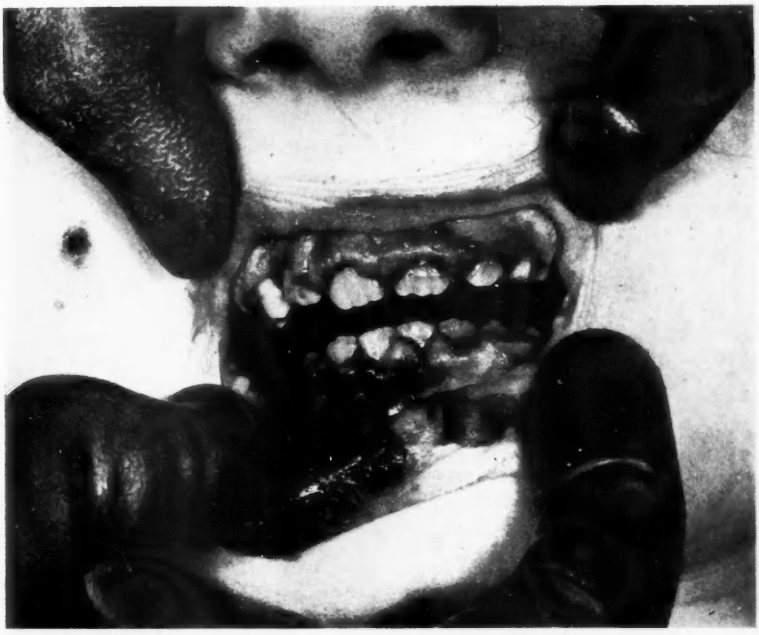
Dr. Tudway: One suggestion is that in certain circumstances it may be the fairly small dose—for example to a leukoplakic area on the tongue—which will stimulate neoplasia, not the larger dose. I think there might be a critical dose which would just do it.

Dr. Bolton then gave figures for the incidence of leukaemia in the years 1947–54 in Hiroshima atom-bomb survivors at varying distances from the centre of the atomic explosion and commented on this evidence of linear relationship of incidence to the amount of radiation received:

Distance from centre (metres)	*Approximate dosage received (r)*	*Incidence (per 10,000 survivors)*
2,000	8	2
1,500–2,000	50	3–4
1,000–1,500	350	28
1,000	More than 1,400	128

Dr. Tudway subsequently pointed out that a certain amount of shielding by buildings at all distances must have occurred thereby modifying the actual dose received by partially protected individuals and that one cannot infer with certainty whether the relationship between dose and the incidence of leukaemia is a curvilinear or a linear one.

PLATE V



Post-mortem appearance of the lips and gums shows hypertrophy due to leukaemic infiltration, haemorrhage and ulceration. There is a petechial haemorrhage on the right cheek.

Notes and News

Dr. Leslie C. Hill delivered the Lumleian lectures on April 2nd and 4th at the Royal College of Physicians. His subject was "Systemic Lupus Erythematosus".

PRIZES

Crosby Leonard Prize: R. T. Marcus.
Francis Dudley Memorial Prize: D. D. Kennedy.

EXAMINATION RESULTS

L.R.C.P., M.R.C.S.: E. E. Bassey, I. E. Doney.

Appointments

SOUTH WESTERN REGIONAL HOSPITAL BOARD

January to April, 1957

BRISTOL

Name	*Appointment*	*Formerly*
BAILY, R. A. J., M.B., B.CHIR. (CANTAB.), F.R.C.S. (ENGLAND).	Consultant Orthopaedic Surgeon to the Weston-super-Mare Group of Hospitals.	Hon. Clinical Assistant in Orthopaedic Surgery at the Royal London Homoeopathic Hospital.
LANCASTER, N. P., M.D. (MANCHESTER), D.P.M. (LONDON).	Consultant Psychiatrist, Bristol Mental Hospitals.	Assistant Psychiatrist at Deva Hospital, Chester.
BORG, F. X., M.D. (MALTA), D.A. (ENGLAND).	Anaesthetic Registrar, Southmead Hospital.	Anaesthetic Registrar, Bedford Group of Hospitals.
HILL, B. W., M.B., CH.B. (BRISTOL).	Clinical Assistant in Dermatology, Cossham Hospital.	In general practice in Bristol.
WETHERED, R. R., B.A., B.M., B.CH. (OZON.).	Clinical Assistant in Dermatology, Southmead Hospital.	In general practice in Bristol.
BANERJEE, A. K., M.B., B.S. (CALCUTTA), F.R.C.S. (ENG.) AND (EDIN.).	Surgical Registrar, Southmead Hospital.	Royal Devon and Exeter Hospital, Exeter.
TALBOT, C. H., M.A., M.B., B.CHIR. (CAMB.), F.R.C.S. (ENG.).	Senior Surgical Registrar, Southmead Hospital (joint appointment with United Bristol Hospitals).	Surgical Registrar, United Sheffield Hospitals.
WATKINS, E. S., B.SC. (LIVERPOOL), M.D. (LIVERPOOL).	Surgical Registrar, Weston-super-Mare General Hospital.	Winford Orthopaedic Hospital.
RUSSELL, MISS P. M., M.D. (LIVERPOOL), D.(OBST.) R.C.O.G., D.C.H.	Registrar in Obstetrics and Gynaecology, Southmead Hospital.	Resident Gynaecological Pathologist, Jessop Hospital for Women, Sheffield.
STATHER-DUNNE, M. T., M.B., B.S. (LONDON), D.P.M. (PART 1).	Registrar, Bristol Mental Hospitals.	S.O.H., Bristol Mental Hospitals.

NORTH GLOUCESTERSHIRE

Name	*Appointment*	*Formerly*
HALLORAN, MISS A., M.B., B.S. (SYDNEY), F.R.C.S. (EDIN.).	Surgical Registrar, Gloucestershire Royal Hospital, Gloucester.	—

NORTH GLOUCESTERSHIRE—continued.

Name	*Appointment*	*Formerly*
FOY, B. N., M.B., B.S. (LONDON).	Registrar in Obstetrics and Gynaecology, Gloucestershire Royal Hospital, Gloucester.	Locum Registrar in Obstetrics and Gynaecology, St. Alfege's Hospital, Greenwich.

BATH

Name	*Appointment*	*Formerly*
COSH, J. A., M.A. (CAMBRIDGE), M.D. (CAMBRIDGE), M.R.C.P. (LONDON).	Consultant Physician to the Bath Clinical Area.	Lecturer in Medicine, University of Bristol, Hon. Asst. Physician to United Bristol Hospitals, Hon. Consultant Physician to Bristol Clinical Area.
MOORE, E. W., M.B., CH.B. (BRISTOL), D.P.H. (BRISTOL) M.R.C.P. (EDINBURGH), D.M.R.D. (CONJOINT BOARD).	Consultant Radiologist to the Bath Clinical Area.	Senior Registrar in Radiodiagnosis, University College Hospital, London.
CHANDRASEKARAN, M.S.I., M.B., B.S. (MADRAS), D.L.O. (PART 1).	E.N.T. Registrar, Bath Group of Hospitals.	S.H.O. in E.N.T. Surgery, Eye, Ear and Throat Hospital, Shrewsbury.

SOUTH SOMERSET

Name	*Appointment*	*Formerly*
BATHELL, M. F., M.A., M.D. (CAMBRIDGE), D.P.M.	Consultant Psychiatrist and Deputy Medical Superintendent, Tone Vale Hospital, nr. Taunton.	Consultant Psychiatrist, Cheadle Royal Hospital, Cheshire.
KNAPPE, S. S., M.D. (WARSAW).	Deputy Medical Superintendent, Sandhill Park Hospital, Bishop's Lydeard.	Assistant Psychiatrist, Hensol Castle, Pontyclun, Glam.

DEVON AND CORNWALL

Name	*Appointment*	*Formerly*
REECE, M. W., M.B., B.S. (LONDON), F.R.C.S. (ENGLAND).	Senior Surgical Registrar, Royal Devon and Exeter Hospital, Exeter (joint appointment with the United Bristol Hospitals).	Surgical Registrar, United Sheffield Hospitals.
COX, M. G., M.A., M.B., B.CHIR., F.R.C.S. (ENGLAND).	E.N.T. Registrar, South Devon and East Cornwall Hospital, Plymouth.	S.H.O., E.N.T. Department, Salisbury General Hospital.
DUKE, R. F. N., B.M., B.CH. (OXFORD).	Orthopaedic Registrar, Torbay Hospital, Torquay.	S.H.O. in Orthopaedics, St. James' Hospital, Balham.